Final
Environmental Impact Statement / Environmental Impact Report for the Edwards AFB Solar Project

SCH# 2017111079

Edwards AFB Solar Project
(PP18136)

Kern County
Planning and Natural Resources Department
Bakersfield, California

Department of the Air Force
Headquarters 412th Test Wing (AFMC)
Edwards Air Force Base California

January 2020

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January 2020

Abstract: The Air Force Proposed Action is to lease land to a developer for the construction, operation, and maintenance of a solar photovoltaic (PV) renewable energy project (proposed project or Proposed Action) at Edwards AFB. The final scale of the Proposed Action is anticipated to be greater than 100 MW but not more than 750 MW, with the generated energy distributed to investor owned utilities, municipalities, other energy off-takers and/or Edwards AFB. The construction scale of such a proposed project would require a lease and development of up to 4,000 acres of non-excess land at Edwards AFB.

PRIVACY ADVISORY

This Final EIS is provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) NEPA Regulations (40 CFR §§1500-1508), and 32 CFR §989, Environmental Impact Analysis Process (EIAP).

The EIAP provides an opportunity for public input on Air Force decision-making, allows the public to offer inputs on alternative ways for the Air Force to accomplish what it is proposing, and solicits comments on the Air Force's analysis of environmental effects.

Public commenting allows the Air Force to make better, informed decisions.

Letters or other written or oral comments provided may be published in the EIS. As required by law, comments provided will be addressed in the EIS and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EIS or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EIS. However, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EIS.

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EXECUTIVE SUMMARY

ES.1 Introduction

This Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) is a joint document published by the U.S. Air Force (Air Force, or USAF) and the County of Kern, California (County). The Air Force is the lead agency pursuant to the National Environmental Policy Act (NEPA). The County is a cooperating agency pursuant to 40 Code of Federal Regulations (CFR) Section 1501.6 and the California Environmental Quality Act (CEQA) lead agency pursuant to Section 15051 of the guidelines for implementing the CEQA. This document provides information needed by the Air Force and County to make a determination on whether or not to implement a solar project on the 4,000-acre Edwards Air Force Base (AFB) property and on the generation tie (gen-tie) line approximately 16 miles in length. This EIS/EIR provides information needed by the USAF and County to make a determination on whether or not to implement a solar project on the 4,000-acre Edwards AFB property (the Proposed Action). This EIS/EIR analysis evaluates at a project level the impacts of the Edwards AFB Solar Project (herein identified as the proposed project or Proposed Action).

The Air Force Proposed Action is to lease land to a developer for the construction, operation, and maintenance of a solar photovoltaic (PV) renewable energy project (proposed project or Proposed Action) at Edwards AFB. The final scale of the Proposed Action is anticipated to be greater than 100 megawatts (MW) but not more than 750 MW, with the generated energy distributed to investor owned utilities, municipalities, other energy off-takers and/or Edwards AFB. The construction scale of such a proposed project would require a lease and development of up to 4,000 acres of non-excess land at Edwards AFB.

The proposed solar facility would be located on Edwards AFB, approximately 6 miles northeast of the community of Rosamond and 6 miles south of Mojave, in southeastern Kern County, California (**Figure ES-1**).

Therefore, pursuant to the Air Force's Environmental Impact Analysis Process (EIAP) regulation, 32 CFR Part 989., which implements the NEPA process, and the state's CEQA guidelines (Public Resources Code Section 2100 et seq and California Code of regulations, Title 14, Section 15000 et seq), the Air Force and County are preparing this EIS/EIR to inform the public and other interested entities of the Proposed Action and alternatives and seek their comments. This EIS/EIR process is intended to provide opportunties for public involvement to better assess the Proposed Action's and alternatives' impacts to the human and natural environment. The resulting information will be considered by the Air Force to achieve a Final EIS/EIR to allow informed decision-making on whether or how to proceed with the Proposed Action and alternatives. Additionally, the County will consider the information in its determination of whether to authorize the franchise agreement. Finally, this documented information may also be considered by other governmental or regulatory agencies associated with any required consultations and/or permits for this Proposed Action and alternatives.

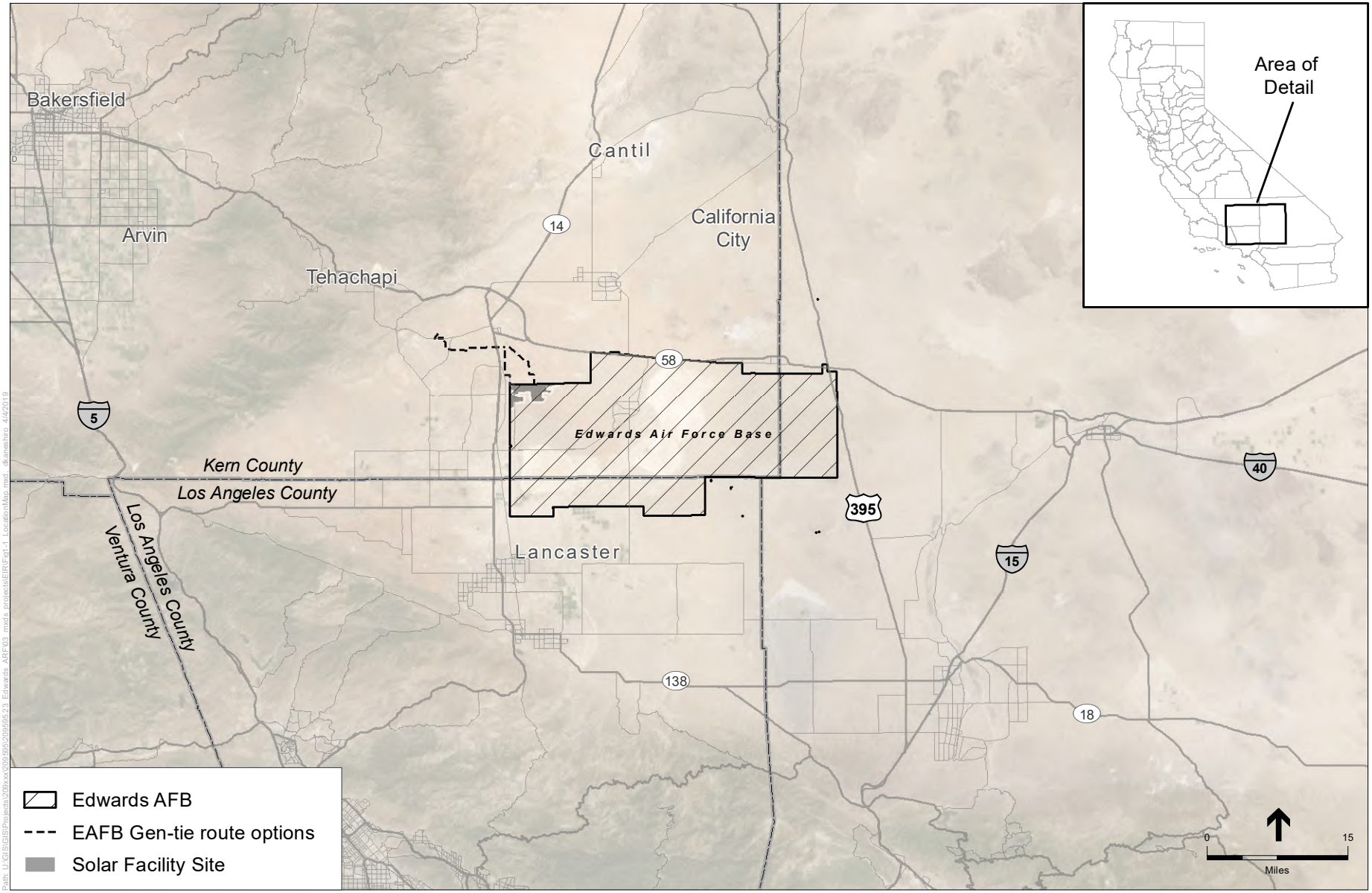

Figure ES-1: PROJECT VICINITY

ES.2 Background

The mission of the Air Force is to fly, fight, and win in air, space and cyberspace. The 412th Test Wing is the host wing for Edwards AFB, California. The 412th Test Wing plans, conducts, analyzes, and reports on all flight and ground testing of aircraft, weapons systems, software, and components as well as modeling and simulation for the Air Force. The wing oversees day-to-day base operations and provides support for over 10,000 military, federal civilian, and contract personnel assigned to Edwards AFB.

In 2007 the Air Force Real Property Agency (AFRPA) now known as Air Force Civil Engineer Center/Installations Directorate (AFCEC/CI) completed a comprehensive analysis of the available lands on Air Force bases and their potential to support renewable energy development through the Enhanced Use Lease (EUL) program (*Renewable Energy Enhanced Use Lease Opportunity Summary Report*; AFRPA, 2007). The EUL program allows the Air Force to lease underutilized, non-excess lands to a third party that would generate monetary or in-kind consideration to the Air Force while also optimizing the value and utility of these lands under authority granted by 10 U.S. Code (USC) Section 2667. The Air Force may lease non-excess land to third parties under specified conditions for the fair market value of the leasehold interest. Results of the 2007 analysis showed that Edwards AFB possessed considerable acreage of non-excess Air Force property that could be more fully utilized through the EUL program. The study found that approximately 6,000 acres of land in the northwest corner of Edwards AFB was suitable for renewable energy development, and had high potential and a market to support a solar energy project (AFRPA, 2007). The report concluded that development of renewable solar energy at Edwards AFB would support the Department of Defense (DoD) and Air Force renewable energy goals and achieve other value that would support base operations and maintenance projects.

In 2011, SunEdison LLC proposed development of the Oro Verde Solar Project on the approximately 6,000-acre EUL property site in the same project area currently proposed in this EIS for the Edwards AFB Solar Project. SunEdison submitted development applications to the Air Force and County and conducted several technical environmental analyses to support those applications. The Air Force and County initiated NEPA and CEQA scoping processes in May 2013. Public scoping meetings were conducted in June 2013. In late 2014, SunEdison LLC stopped development of the project.

Upon termination of the agreement with SunEdison, LLC, the Air Force did not have an agreement in place with an energy developer and therefore revised the environmental impact analysis for the project from a site-specific analysis to a broader programmatic level of analysis to support future project planning. In June 2016, the Air Force released an updated Notice of Intent to describe this change.

In February 2017, the Air Force released a new Request for Qualifications for solar development through the EUL program. In 2017, private offerors submitted proposals to Edwards AFB to construct, operate, and maintain a utility-scale solar PV energy-generating facility. Edwards AFB property would be developed under the terms of a site development lease on up to 4,000 acres of non-excess real property under the control of the Secretary of the Air Force. A developer was selected by the Air Force and filed an application with the County for a franchise agreement for

routing a gen-tie transmission line from the proposed solar facility to the SCE Windhub Substation and/or the privately owned Westwind Substation.

In November 2017, the Air Force published a new Notice of Intent to prepare a project-level EIS/EIR to once again propose and evaluate the environmental impacts of a specific project. The solar facility proposed under the current Proposed Action has the same general design and components as the former Oro Verde Solar Project proposed in 2013, and the proposed solar array continues to be sited around sensitive environmental features to reduce impacts. The gen-tie route options associated with the Proposed Action follow different alignments than those proposed for the former Oro Verde Solar Project. Because existing conditions at the site and immediately surrounding areas have not changed substantially since 2013, several of the technical environmental analyses that were prepared for the Oro Verde Solar Project have been used in the evaluation of environmental impacts of the Proposed Action. As described in further detail in Chapter 3, *Environmental Setting and Environmental Consequences*, where appropriate, additional and/or updated data has been provided to verify the applicability of the former analyses to the current Proposed Action. Additionally, new technical analyses have been conducted for the Proposed Action gen-tie alignment options.

ES.3 Purpose and Need

ES.3.1 NEPA

The purpose of the Proposed Action is to meet Air Force objectives to optimize the value of non-excess lands at Edwards AFB by leasing property for renewable energy development in accordance with 10 USC Section 2667 and to promote the efficient and economical use of real property assets at Edwards AFB in accordance with Executive Order (EO) 13327, Federal Real Property Asset Management. Pursuing an EUL renewable energy development would support the Air Force's requirements to meet federal renewable energy mandates while supporting efforts to achieve DoD and Air Force goals for renewable energy generation on DoD lands to enhance energy conservation, availability, and efficiencies and also reduce greenhouse gas (GHG) levels. Edwards AFB identified several thousand acres of non-excess lands it could lease at fair market value that would achieve a higher and better land use through development of a renewable solar energy project.

DoD leasing tools such as 10 USC Section 2667, *Leases: Non-Excess Property of Military Departments and Defense Agencies*, allow the Air Force, through its EUL program, to lease non-excess real property for terms that promote the national defense or are in the public interest. In seeking solar energy development, Edwards AFB is also pursuing objectives outlined in the February 14, 2007, Department of the Air Force memorandum titled *Pursuing "Value-Based" Transactions Involving Air Force Real Property Assets*. This memorandum defines organizational responsibilities for Air Force organizations to optimize the value of real property assets using authorized tools such as the EUL program.

Additionally, the Air Force has continued to develop and refine its energy program and goals for increased energy efficiency and renewable energy production on its bases. On January 6, 2017, the Air Force released their Energy Flight Plan, 2017–2036. Goals within the energy strategy include monetizing non-excess assets such as land in return for consideration that advances energy

resiliency objectives. Development of the proposed project will help the Air Force to meet the goal of optimizing the value of non-excess property while supporting Air Force energy goals. The Air Force is also working to achieve reductions of GHG emissions through energy conservation, increased energy efficiencies of its facilities, and increased consumption of its energy needs from renewable energy sources. Implementation of the Proposed Action would minimize global GHG emissions by producing energy from renewable, non-carbon-based sources instead of promoting the consumption of energy derived from fossil fuels. The proposal of leasing Air Force land for development of the Proposed Action would produce a new renewable energy source beneficial to the state and the public and would support the achievement of established federal, DoD, and Air Force energy mandates and goals.

Currently, Edwards AFB facilities must be renovated, or in some cases outdated facilities may need to be demolished in order to reduce energy consumption and increase energy efficiency in accordance with 10 USC Section 2911. Lease consideration received in return for the fair market value of leased land would additionally provide Edwards AFB with the ability to implement installation projects to support its own sustainable energy efficiencies, conservation, and reduced GHG emissions goals. In accordance with a policy memorandum issued from the Undersecretary of Defense (Installations and Environment), at least 50 percent of the lease consideration generated from the EUL would be used for improving energy conservation (OSD, November 2012). Therefore, development of the Proposed Action on land leased by Edwards AFB would support successful achievement of its sustainable renewable energy goals while also optimizing the use of non-excess Air Force property in a manner consistent with national defense and public interests.

The Air Force need includes meeting the following objectives:

- Evaluate renewable energy projects on non-excess Air Force real property that would promote the efficient and economic use of federal real property under EO 13327, Federal Real Property Management and Air Force policy guidance (Air Force Policy Memorandum, February, 2007).
- Support attainment of federal, DoD, and Air Force energy and facilities mandates and goals including 10 USC Section 2911 and the Energy Flight Plan 2017-2036 (Air Force, January 2017) supporting utility-scale projects that increase renewable energy capacity and its distribution.

ES.3.2 CEQA

As a cooperating agency, the County's purpose is to ensure the Proposed Action or alternatives are implemented in a manner consistent with the County's General Plan and Mojave Specific Plan, Soledad Mountain-Elephant Butte Specific Plan, West Edwards Road Settlement Specific Plan, and the Actis Interim Rural Community Plan. These plans prescribe land use designations and transportation plans in the area potentially affected by the Proposed Action, and are implemented through standards described within the Kern County Zoning Ordinance. The County is also responsible for regulating public utilities within public rights-of-way (ROWs) through the approval of franchise agreements. Franchise agreements are discretionary actions, and as such are required to comply with CEQA. The franchise agreement would permit the construction of portions of the gen-tie line within public and private ROW between the proposed Edwards AFB leased site to the

point of interconnection (off Edwards AFB) of the generated renewable energy or power that is managed by public utilities under California Public Utilities Commission (CPUC) regulations.

ES.4 Project Objectives

CEQA requires a statement of project specific objectives (Section 15124 of the CEQA Guidelines).

The following are the objectives for the Proposed Action:

- Establish a solar PV generating facility greater than 100 MW in order to assist the state of California in achieving the Renewable Portfolio Standard (RPS) for 2030, by providing a significant new source of renewable energy (California State Assembly Bill [AB] 32, Senate Bill [SB] 1078, SB 107, SB 350, and SB 2).
- Supply clean, safe, renewable energy.
- Produce and transmit electricity at a competitive cost and in a manner that is eligible for commercial financing.
- Use technology that is available, proven, efficient, easily maintained, recyclable, and environmentally sound.
- Support the economic development of Kern County, Los Angeles County, and the State of California.
- Enhance existing electrical distribution infrastructure and provide greater support to existing and future customer loads.
- Minimize environmental effects by:
    - Using existing electrical distribution facilities, ROW, roads, and other existing infrastructure, where practicable
    - Minimizing impacts on threatened and/or endangered species
    - Minimizing water use; and
    - Reducing GHG emissions.
- Advance Department of Defense energy resilience and security goals by optimizing the value of under-utilized Air Force real property assets consistent with Department of Defense Instruction 4170.11, Installation Energy Management and the Air Force Energy Flight Plan, 2017–2036.

ES.5 Proposed Action and Alternatives

ES.5.1 Comparison of Alternatives

Each of the following alternatives (except Alternative D) is described in detail in Chapters 2 and 4. Alternative D is not included in Chapter 2 because it not considered to be a feasible NEPA Alternative for meeting the Purpose and Need of the Air Force but Alternative D was retained for analysis as a CEQA Alternative and is described in Chapter 4.

Alternative A: Proposed Action (4,000-Acre EUL). The Proposed Action, or the Air Force Preferred Alternative, would consist of the construction, operation, and decommissioning of a PV facility of greater than 100 MW of energy on up to a maximum of 4,000 acres of undeveloped, non-excess real property on the project site in the northwest corner of Edwards AFB. The Proposed Action would also consist of the construction of an associated gen-tie line approximately 16 miles in length (see **Figure ES-2**). The site plan for this alternative is shown on **Figure ES-3**.

Alternative B: Reduced Project (1,500-Acre EUL). This alternative would consist of the construction, operation, and decommissioning of a utility-scale PV solar facility on up to a maximum of 1,500 acres of non-excess real property located within the project site. Alternative B would involve construction using the same technology and components described for Alternative A. This alternative would use the same gen-tie line route proposed in Alternative A (see Figure ES-2) The reduced project alternative would require less acreage and therefore reduce all construction-related ground disturbance required to support the full project alternative described in Alternative A. The site plan for this alternative can be found in **Figure ES-4**.

Alternative C: No Action/No Project. Under Alternative C, the proposed EUL action and solar array development would not occur. This alternative would not include any development on the project site. Base operations at Edwards AFB would continue without the benefit of the EUL or lease consideration. Non-excess lands would not be utilized. Project-related reductions in GHG emissions would not occur, nor would the Air Force assist the County or state of California in attainment of RPS. This alternative would avoid all significant impacts. However, it would not meet the Purpose and Need of the Air Force. The No Action/No Project alternative serves as a baseline from which to evaluate environmental impacts of the alternatives under NEPA.

Alternative D: No Ground-Mounted Utility-Solar Development – Distributed Commercial and Industrial Rooftop Solar Only. This alternative would consist of the construction of the same amount of PV solar electricity as the proposed project. Rather than in the project site boundary, PV solar panels would be distributed on rooftops throughout the region. This alternative would avoid a EUL, Conditional Use Permit (CUP) and franchise agreement for the project site, but may require other entitlements (such as a CUP or variance) on other sites. As compared to Alternative A, this alternative would avoid direct significant impacts to aesthetics, air quality, and cultural resources. It would potentially reduce construction related impacts on biological resources, water use, and traffic.

ES.5.2 Lead Agency Preferred Alternative

Under NEPA, the "preferred alternative" is a preliminary indication of the lead agency's preference of action among the Proposed Action and alternatives. A NEPA lead agency may select a preferred alternative for a variety of reasons, including the agency's priorities, in addition to the environmental considerations discussed in the EIS. In accordance with NEPA (40 CFR 1502.14(e)), the Air Force preliminarily has identified Alternative A, the Proposed Action, as the preferred alternative.

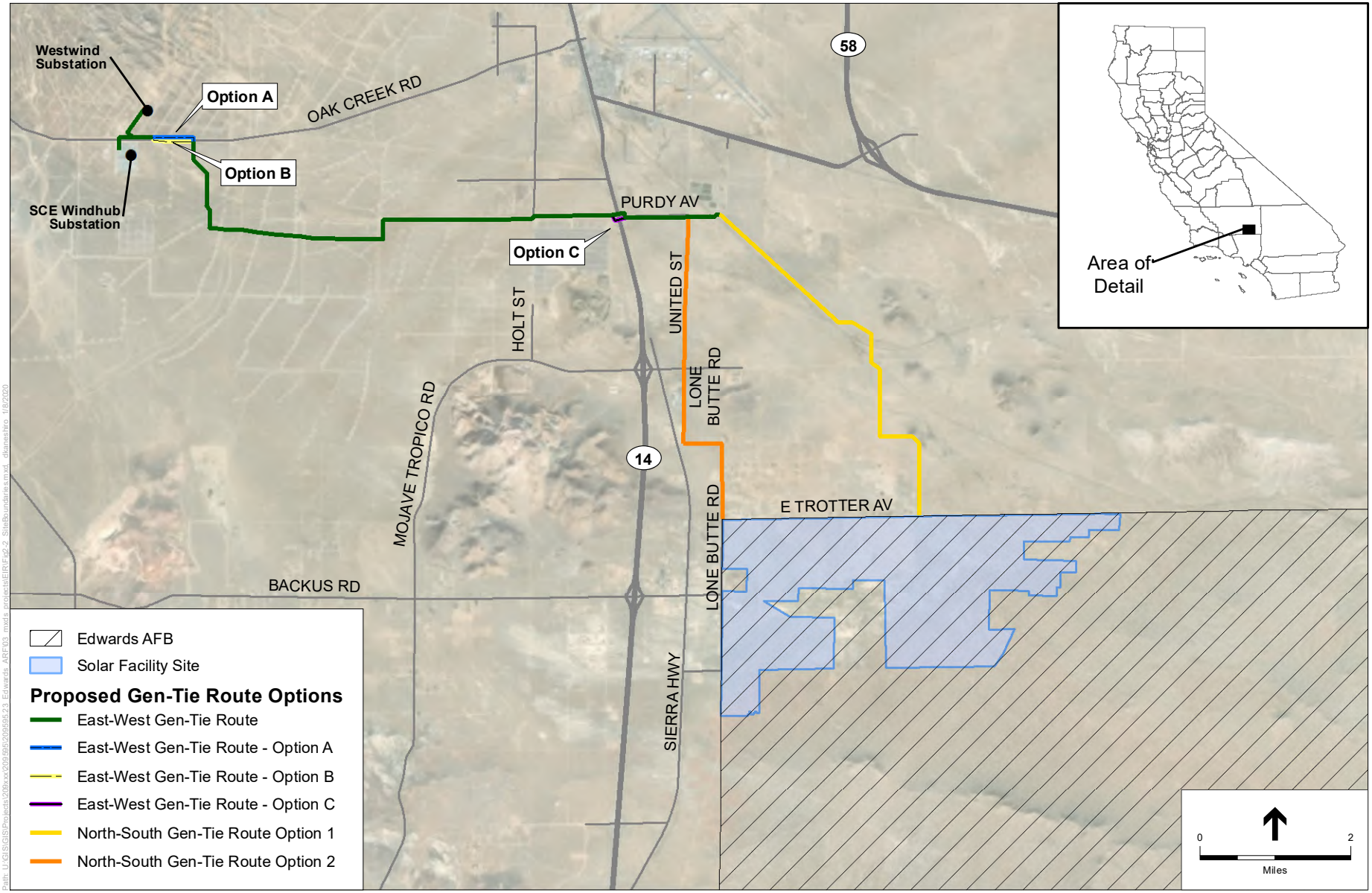

Figure ES-2: SITE BOUNDARIES

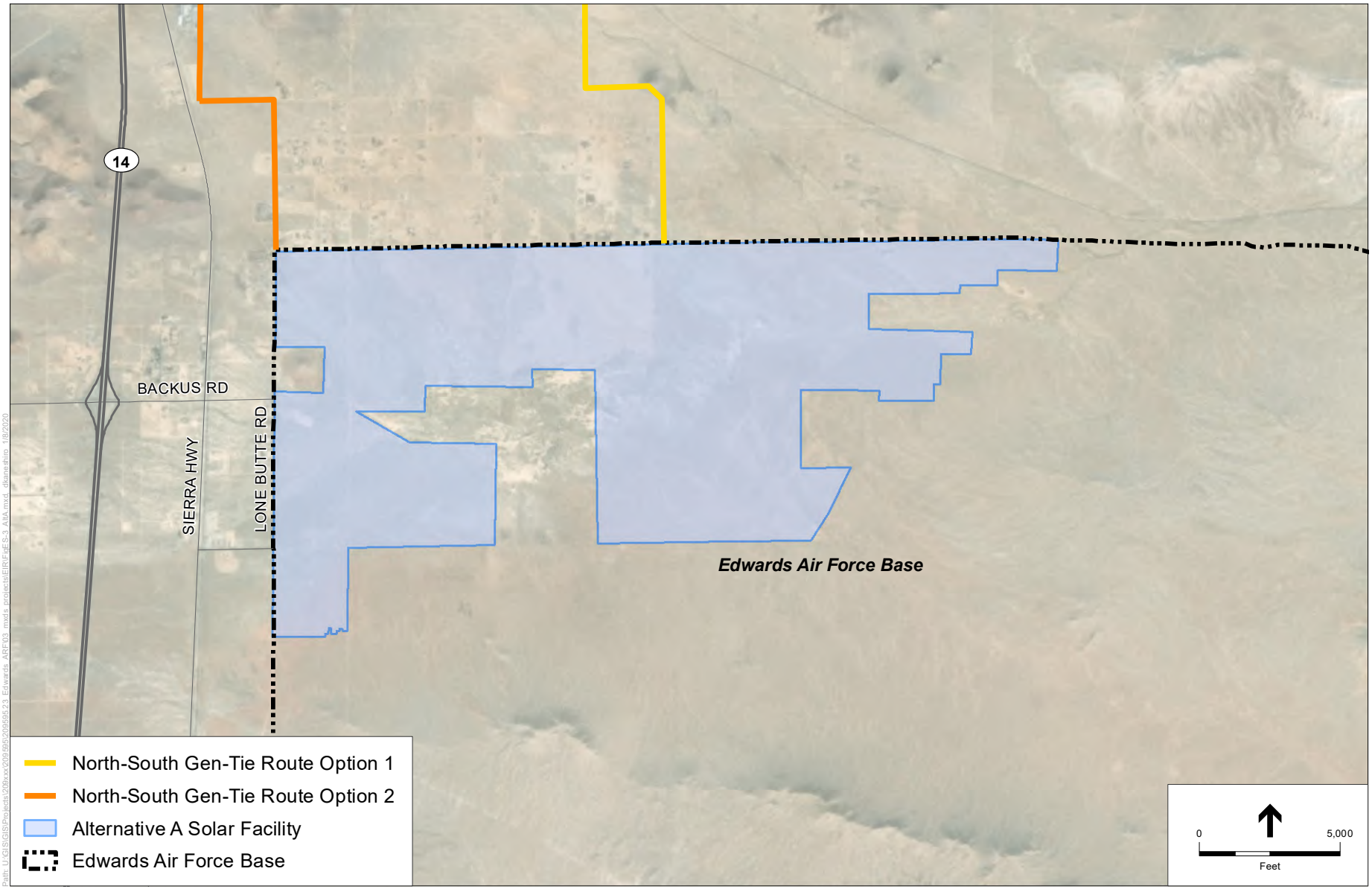

Figure ES-3: ALTERNATIVE A SITE PLAN

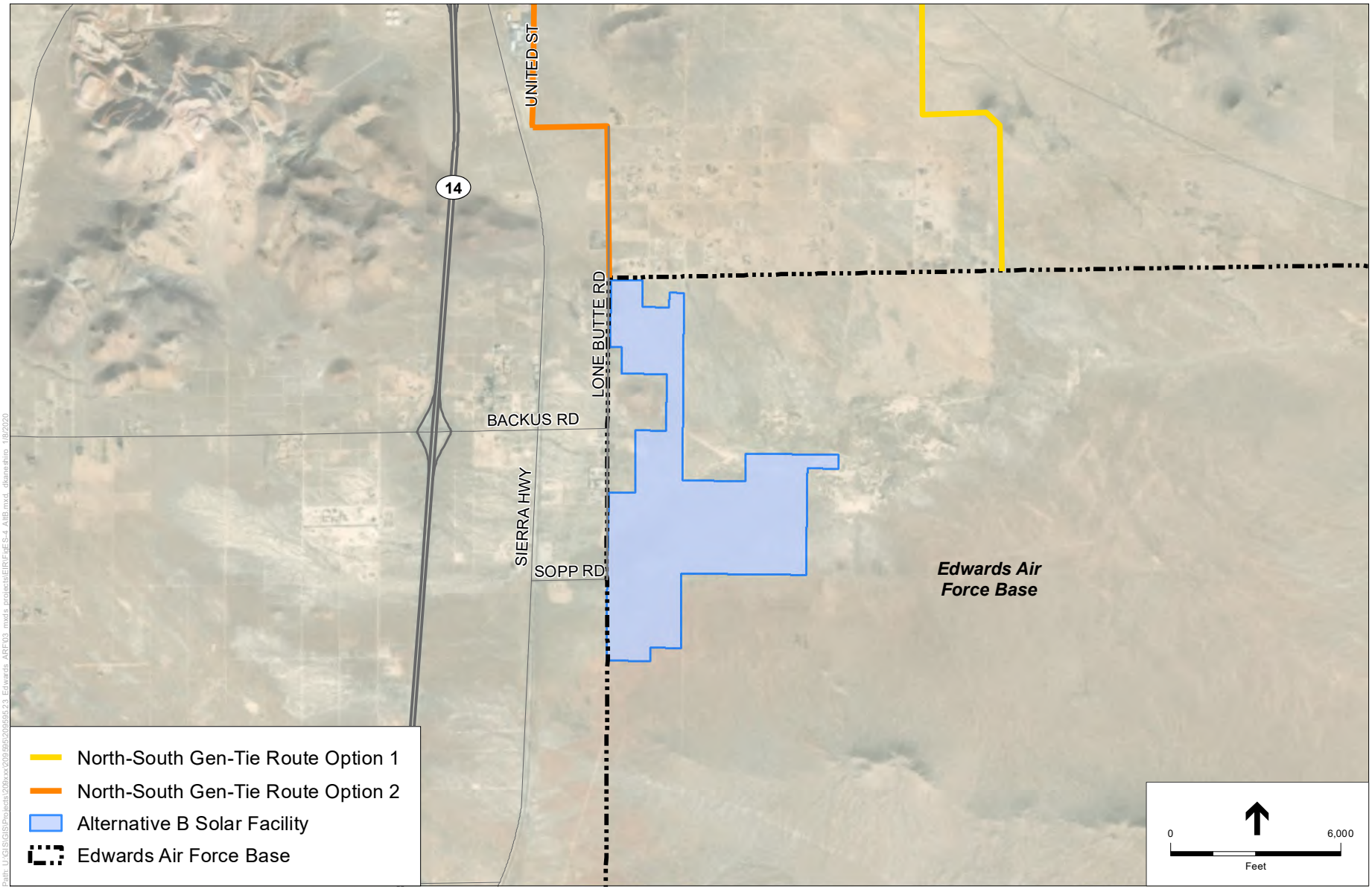

FIGURE ES-4: ALTERNATIVE B REDUCED PROJECT BUILD-OUT

CEQA Guidelines Section 15126.6(e) (2) requires an EIR to identify an environmentally superior alternative. If the environmentally superior alternative is the No Project Alternative, the EIR also must identify an environmentally superior alternative from among the other alternatives. In general, the environmentally superior alternative is defined as that alternative with the least adverse impacts to the project area and its surrounding environment.

ES.6 Environmental Impacts

ES.6.1 Impacts Not Further Considered in This EIS/EIR

Environmental issues not present in the project area or not affected by the alternatives include:

- Population and Housing
- Recreation

Population and Housing. As discussed in Appendix A1 (Notice of Preparation/Initial Study), because construction of the proposed project would be temporary and short term and operation of the project would require a relatively small number of people (10), it was determined that the proposed project would not have the potential to result in population growth that would result in the need for construction of new homes, displacement of existing housing, or displacement of substantial numbers of people. Therefore, this issue is not analyzed in this EIS/EIR.

Recreation. As discussed in Appendix A1, the temporary increase of population during construction that might be caused by an influx of workers would be minimal and would not result in a detectable increase in the use of parks or other recreational facilities. Therefore, this issue is not analyzed in this EIS/EIR.

Impacts related to the following resource areas are evaluated in this EIS/EIR for their potential significance:

- Aesthetics
- Agricultural Resources
- Air Quality
- Airspace Management and Use
- Biological Resources
- Cultural and Paleontological Resources
- Geology, Minerals, and Soils
- Greenhouse Gas Emissions
- Hazardous Materials and Safety
- Infrastructure
- Land Use
- Noise
- Public Services
- Socioeconomics and Environmental Justice
- Transportation
- Tribal Resources
- Hydrology and Water Quality

ES.6.2 Impacts of the Proposed Project

ES.6.2.1 Less-than-Significant Impacts (Including Significant Impacts that Can Be Mitigated, Avoided, or Substantially Lessened)

Table ES-1 presents those resources for which impacts of the project were determined to be less than significant. Less-than-significant cumulative impacts are also included in this table. Sections 3.1 through 3.16 of this EIS/EIR present detailed analysis of these impacts and describe the means by which the mitigation measures listed in Table ES-1 would reduce impacts to a less than significant level. With respect to federal NEPA regulations, cumulative impacts (effects) are defined in in 40 CFR Section 1508.7 by the Council on Environmental Quality (CEQ).

TABLE ES-1
SUMMARY OF PROPOSED PROJECT IMPACTS THAT ARE LESS THAN SIGNIFICANT OR LESS THAN SIGNIFICANT WITH MITIGATION

Impact	Mitigation Measures
Aesthetics	MM 3.1-1a through MM 3.1-3a, MM 3.1-1b through MM 3.1-3b, and MM 3.5-4a
Agricultural Resources (Project and Cumulative)	None required
Air Quality	MM 3.3-1a through MM 3.3-10a and MM3.3-1b through MM3.3-8b
Airspace Management and Use (Project and Cumulative)	MM 3.4-1a, MM 3.4-2a, and MM 3.4-1b
Biological Resources (Project and Cumulative)	MM 3.5-1a through MM 3.5-13a and MM 3.5-1b through 3.5-15b
Cultural & Paleontological Resources	MM 3.6-1a through MM 3.6-10a and MM 3.6-1b through MM 3.6-8b
Geology and Soils (Project and Cumulative)	MM 3.7-1a, MM 3.7-2a, and MM 3.7-1b through MM 3.7-4b
Greenhouse Gas Emissions (Project and Cumulative)	MM 3.3-1b through MM 3.3-6b
Hazardous Materials and Safety (Project and Cumulative)	MM 3.9-1a through MM 3.9-6a and MM 3.9-1b through MM 3.9-8b
Infrastructure (Project and Cumulative)	MM 3.10-1a, MM 3.10-1b, MM 3.10-2a, MM 3.10-2b, MM 3.11-1a, MM 3.11-1b, MM 3.16-3a, and MM 3.16-3b
Land Use (Project and Cumulative)	MM 3.11-1a and MM 3.11-1b
Noise (Project and Cumulative)	MM 3.12-1a, MM 3.12-2a, MM 3.12-1b, and MM 3.12-2b
Public Services (Project and Cumulative)	MM 3.13-1a, MM 3.13-1b, MM 3.9-6a, and MM 3.9-8b
Socioeconomics and Environmental Justice	None Required
Transportation (Project and Cumulative)	MM 3.15-1a, MM 3.15-1b, and MM 3.15-2b
Tribal Cultural Resources (Project and Cumulative)	None required
Water Resources (Project and Cumulative)	MM 3.9-1a, MM 3.9-1b, MM 3.16-1a, MM 3.16-1b, MM 3.16-2a, MM 3.16-2b, MM 3.16-3a, MM 3.16-3b, MM 3.16-4a, MM 3.16-4b, MM 3.16-5a, and MM 3.16-5b

ES.6.2.2 Significant and Unavoidable Impacts

Table ES-2 presents those impacts of the proposed project that are significant and unavoidable even with the implementation of mitigation measures. As stated above, this EIS/EIR presents a detailed analysis of these impacts and describes the means by which the mitigation measures, listed in Table ES-2, would reduce the severity of impacts to the extent feasible.

TABLE ES-2
SUMMARY OF PROPOSED PROJECT IMPACTS THAT ARE SIGNIFICANT AND UNAVOIDABLE

Impact	Mitigation Measures
Aesthetics (Project and Cumulative)	MM 3.1-1a through MM 3.1-3a, MM 3.1-1b through MM 3.1-3b, and MM 3.5-4a
Air Quality (Project and Cumulative)	MM 3.3-1a through MM 3.3-10a and MM3.3-1b through MM3.3-8b

ES.6.2.3 Significant Cumulative Impacts

According to Section 15355 of the CEQA Guidelines, the term cumulative impacts "...refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." With respect to federal NEPA regulations, cumulative impacts (effects) are defined in in 40 CFR Section 1508.7 by the CEQ. Individual effects that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearby projects, including newly proposed projects, the effects could be cumulatively considerable. This EIS/EIR has considered the potential cumulative effects of the proposed project along with other current and reasonably foreseeable projects. Impacts for the following have been found to be cumulatively considerable:

- Aesthetics
- Air Quality

ES.7 Summary of Environmental Impacts and Mitigation

Table ES-3 summarizes the comparison of alternatives identified and analyzed in Chapter 4 of this EIS/EIR. Refer to the appropriate section for additional detail.

Table ES-4 summarizes the comparison of impacts and CEQA significance determinations for all alternatives.

Table ES-5 summarizes the environmental impacts of the project, mitigation measures, and unavoidable significant impacts identified and analyzed in Chapter 3 of this EIS/EIR. Refer to the appropriate section for additional detail.

TABLE ES-3
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
Aesthetics	Indirect impacts as a result of dust clouds generated from construction grading activities. Direct impacts to visual resources. Direct impacts to visual resources during decommissioning.	Similar, but reduced impacts to visual resources as Alternative B would only require one-third of the area.	No impacts to visual resources in the Proposed Action area.	Reduced aesthetic impacts as installation of panels on large rooftops would be visually unobtrusive or unnoticed at ground level.
Air Quality	Construction Emissions / *De Minimis* Level Units tons/year (first calendar year) ROG = 1.39 / *50* NOx = 11.89 / *50* CO = 15.51 / *100* SOx = 0.04 / *100* PM10 = 9.98 / *70* PM2.5 = 1.54 / *100* **Does not exceed *De Minimis* Level** Construction Emissions / *De Minimis* Level Units tons/year (second calendar year) ROG = 2.57 / *50* NOx = 23.31 / *50* CO = 29.82 / *100* SOx = 0.08 / *100* PM10 = 17.57 / *70* PM2.5 = 2.83 / *100* **Does not exceed *De Minimis* Level** Construction Emissions / *De Minimis* Level Units tons/year (third calendar year) ROG = 1.21 / *50* NOx = 11.43 / *50* CO = 14.93 / *100* SOx = 0.04 / *100* PM10 = 9.88 / *70* PM2.5 = 1.53 / *100*	Construction Emissions / *De Minimis* Level Units tons/year (first calendar year) ROG = 0.58 / *50* NOx = 5.05 / *50* CO = 6.62 / *100* SOx = 0.02 / *100* PM10 = 3.77 / *70* PM2.5 = 0.61 / *100* **Does not exceed *De Minimis* Level** Construction Emissions / *De Minimis* Level Units tons/year (second calendar year) ROG = 0.53 / *50* NOx = 5.01 / *50* CO = 6.55/ *100* SOx = 0.01 / *100* PM10 = 3.78 / *70* PM2.5 = 1.45 / *100* **Does not exceed *De Minimis* Level** Operational: Emissions / *De Minimis* Level Units tons/year ROG = 0.16 / *50* NOx = 0.12 / *50* CO = 0.10 / *100* SOx = 0.00 / *100* PM10 = 0.02 / *70* PM2.5 = 0.01 / *100*	No impacts to air quality. If Alternative A is not built, then approximately 656,752 million tons of carbon dioxide equivalent (MT CO_2e) per year of emissions from electricity generated by fossil fuel sources would not be reduced by renewable electricity from solar energy production.	Reduced impacts to air quality as no construction activities or ground disturbance would occur. Construction emissions related to delivery of materials and workers would be similar to or greater than Alternative A.

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
	Does not exceed *De Minimis* Level Operational Emissions / *De Minimis* Level Units tons/year ROG = 0.23 / *50* NOx = 0.31 / *50* CO = 0.24 / *100* SOx = 0.00 / *100* PM10 = 0.06 / *70* PM2.5 = 0.02 / *100* **Does not exceed *De Minimis* Level** Decommissioning Comparable in type and magnitude, but likely to be lower than the construction emissions, and not expected to violate national or state ambient air quality standards.	**Does not exceed *De Minimis* Level** Decommissioning: Comparable in type and magnitude, but likely to be lower than the construction emissions.		
Airspace Management and Use	Less than significant impacts with regard to consistency with the Airport Land Use Compatibility Plan (ALUCP), air traffic levels or patterns, safety or operational hazards to aircraft, and glint and glare assessments.	Similar, but reduced impacts due to a smaller area of disturbance.	No impact related to consistency with the ALUCP and air safety hazards, air traffic levels or patterns, safety or operational hazards to aircraft, and glint and glare assessments	Reduced impacts as a construction of a gen-tie lie is not required. Reduced impacts with regard to glint and glare.
Biological Resources	Direct impact to removing a maximum of 4,150 acres of general non-sensitive vegetation and wildlife resources. Direct and indirect impacts to special-status plant species. Direct impacts to special-status (federal and state) wildlife species. Direct impacts to sensitive habitats, including Joshua tree woodlands and wildlife movement corridors.	Similar but reduced potential impacts to special-status plants and wildlife with regard to a smaller amount of construction-related ground disturbance.	No impacts to onsite conditions or existing biological resources, including general vegetation and wildlife resources, special-status plants, special-status wildlife, and sensitive habitats.	Reduced impacts to biological resources as installation of solar panels would occur on currently developed areas.
Cultural and Paleontological Resources	Direct impacts to known and unknown cultural resources, archaeological resources, paleontological resources, and historical resources. Indirect impacts during routine operation and maintenance activities on cultural resources.	Similar but reduced impacts to cultural resources, archaeological resources, paleontological resources, and historical resources due to reduced physical development of the site.	No impacts to cultural or paleontological resources at the project site.	Reduced impacts to cultural resources as only previously developed areas would be modified.

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
Geology and Soil Resources	Within the project site, there is an absence of any known active faults that cross or come anywhere near the project site; ergo, there would be no adverse effects related to fault rupture. The site is not located in an area undergoing fluid withdrawal that could generate a potential subsidence effect. Construction of the proposed project would involve earthwork activities that could expose soils to erosion.	Similar but reduced potential for adverse soil conditions; similar potential for ground subsidence or seismic-related ground failures. Reduced potential for erosion due to smaller site.	No impacts to geology, minerals, or soils.	Reduced impacts to geology and soils as it would not require in-ground construction and minimally expose people to geologic or seismic hazards.
Greenhouse Gas Emissions	Construction Emissions / CEQ Level Units tons/year (first calendar year) CO_2e = 3,790.26 / *25,000* **Does not exceed CEQ Level** Construction Emissions / *CEQ* Level Units tons/year (second calendar year) CO_2e = 7,608.45 / *25,000* **Does not exceed CEQ Level** Construction Emissions / *CEQ* Level Units tons/year (third calendar year) CO_2e = 3,945.72 / *25,000* **Does not exceed CEQ Level** Operational Emissions / *CEQ* Level Units tons/year CO_2e = 3,948.65 / *25,000* **Does not exceed CEQ Level** Decommissioning Comparable in type and magnitude, but likely to be lower than the construction emissions, and not expected to violate national or state ambient air quality standards.	Construction Emissions / *CEQ* Level Units tons/year (first calendar year) CO_2e = 3,782.10 / *25,000* **Does not exceed CEQ Level** Construction Emissions / *CEQ* Level Units tons/year (second calendar year) CO_2e = 1,902.28 / *25,000* **Does not exceed CEQ Level** Operational: Emissions / *CEQ* Level Units tons/year CO_2e = 1,473.01 / *25,000* **Does not exceed CEQ Level** Decommissioning: Comparable in type and magnitude, but likely to be lower than the construction emissions.	No generation of GHG emissions that would cause any impact to global climate change. Since Alternative A would not be built, approximately 656,752 MT CO2e per year of emissions from electricity generated by fossil-fuel sources would not be reduced by renewable electricity from solar energy production.	Impacts would be similar to, or greater than, Alternative A, because the GHG emissions from delivery of materials and workers would travel to greater distances at which construction sites would be located.
Hazards and Hazardous Materials	Potential impacts from the accidental release of hazardous materials during construction, maintenance and decommissioning.	Similar but reduced likelihood of accidental release of hazardous materials used onsite or potential due to smaller site and shorter construction time.	No impacts related to the accidental release of hazardous materials.	Reduced impacts as no construction activities would occur that could potentially disturb hazardous materials.

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
Infrastructure	Construction period would require up to 200 acre-feet per year (AFY) of water to support concrete manufacturing, dust control, and sanitation. No impacts to electrical, natural gas, or other utility lines. Operation activities would require up to 30 AFY. A septic system would be needed to dispose of wastewater. Solid waste generated would not exceed the capacity of the Rosamond Landfill.	Similar but reduced usage of water and wastewater during construction due to the reduced size of the facility.	No impact to water supplies or generation of wastewater or solid waste.	Reduced impact as solar equipment installed on existing structures would not require new, in-ground construction.
Land Use	No conflict with floor-area ratio (FAR) regulations, Edwards AFB Installation Development Plan, Kern County General Plan, and West Edwards Road Settlement Specific Plan.	Similar impacts to Alternative A.	No impact to applicable land use plans, policies, and regulations.	Similar impacts to Alternative A.
Noise	Construction and decommissioning: maximum noise level generated would be 93 dBA at 50 feet from noise source, or 87 dBA from nearest sensitive receptor. Operation and maintenance would not result in any activities that would generate substantial temporary or periodic increases in ambient noise levels.	Reduced noise impacts due to the reduced size of the facility and siting further from the nearest sensitive receptor, and shorter construction timeframe.	No impact to noise levels associated with construction, operation and maintenance, and decommissioning.	Greater impacts as construction noise could occur adjacent to residences, which would result in impacts to a larger number of sensitive receptors.
Public Services	Increase in truck and employee traffic on haul routes during construction and operation could increase impacts on fire protection and police protection services.	Similar but reduced as this Alternative would require fewer construction workers and operations staff.	No impact to fire and police protection services.	Reduced impacts as this Alternative would not increase demand of public services.
Socioeconomics	Construction workforce consists of 100 to 450 daily workers, which would generate an estimated 779 jobs over the 2-year construction period. Operation and maintenance would require approximately 10 full-time personnel.	Similar but reduced impacts as this Alternative would require fewer workers and a reduction in the duration of construction. It would also require fewer full-time employees during operation and maintenance due to the smaller size of the facility.	No impact to employment and economic benefits.	
Environmental Justice	There are no communities of concern in the study area; therefore, the project would not result in human health and environmental adverse effects that would cause disproportionately high and adverse impacts on local and regional	There are no communities of concern in the study area; therefore, there the project would not result in human health and environmental adverse effects that would cause disproportionately high and adverse impacts on local and	No impact on local and regional communities of concern, including minority or low-income populations.	There are no communities of concern in the study area; therefore, the project would not result in human health and environmental adverse effects that would cause disproportionately high and adverse impacts on local and

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
	communities of concern, including minority or low-income populations.	regional communities of concern, including minority or low-income populations.		regional communities of concern, including minority or low-income populations.
Transportation	Construction and decommissioning: increased traffic (1,840 daily trips) with no substantial change in LOS on affected roadways. Operation and maintenance: minor traffic increase.	Construction and decommissioning: reduced duration of traffic increases. Operation and maintenance: slightly reduced traffic increase.	No impacts to existing traffic conditions on area roadways.	Reduced impact as construction installation trips would be dispersed and would not congregate in one location.
Hydrology and Water Quality	Construction and decommissioning: potential impacts to water quality through erosion and sedimentation. A maximum of approximately 200 AFY of water per year would be required during the 2-year construction period. Approximately 200 total AFY would be required during decommissioning for dust control and sanitation. During operation, the proposed project would require approximately 30 AFY.	Similar construction, impacts to hydrology and water quality. Reduced impacts related to erosion and flooding due to fewer disturbed ground acres and shorter construction period. Similar operational and decommissioning impacts, reduced amounts of pervious ground surface lost.	No impacts related to hydrology and water quality.	Reduced impacts, as there would be no increase in impervious surfaces.

TABLE ES-4
CEQA COMPARISON OF ALTERNATIVES

Environmental Resource	**Alternative A:** Proposed Project (Up to 4,000-acre Solar PV Project)	**Alternative B:** Reduced Scale Project (1,500-acre Solar PV Project)	**Alternative C:** No Action / No Project	**Alternative D:** Rooftop Solar
Aesthetics	Significant and Unavoidable	Significant and Unavoidable Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Agricultural Resources	Less than Significant	Less than Significant Same as A	No Impact Reduced Compared to A	No Impact Reduced Compared to A
Air Quality	Significant and Unavoidable	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Airspace Management and Use	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Biological Resources	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Cultural & Paleontological Resources	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Geology, Minerals, and Soils	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Greenhouse Gas Emissions	Less than Significant	Less than Significant Reduced Compared to A	Less than Significant Increased Compared to A	Less than Significant Reduced Compared to A
Hazards and Hazardous Materials	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Infrastructure	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Land Use	Less than Significant	Less than Significant Same as A	No Impact Reduced Compared to A	Less than Significant Similar to A
Noise	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Increased Compared to A
Public Services	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Transportation	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Hydrology and Water Quality	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A

TABLE ES-5
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED ACTION SOLAR FACILITY (AIR FORCE MITIGATION AUTHORITY)

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.1 Aesthetics			
Impact 3.1-1: Substantially degrade the existing visual character or quality of the site and its surroundings.	Potentially significant	**MM 3.1-3a: Recycling and Trash Abatement.** Prior to issuance of a grading or building permit, a Maintenance, Recycling and Trash Abatement, and Pest Management Program shall be submitted to the Air Force and Kern County. The program shall include, but not limited to the following: 1. The project proponent shall clear debris from the project area at least twice per year; this can be done in conjunction with regular panel washing and site maintenance activities. 2. Signs shall be clearly established with contact information for the project proponent's maintenance staff at regular intervals along the site boundary. Maintenance staff shall respond within 3 days to resident requests for additional cleanup of debris. Correspondence with such requests and responses shall be submitted to the Air Force, as necessary. 3. Daily construction trash removal with recycling program. Pest/rodent barriers for all receptacles shall be detailed. Locations of all recycling and trash receptacles during operation of the project shall be shown on final plans. 4. Weekly/Monthly/Annual ongoing trash removal and recycling program. Pest/rodent barriers for all receptacles shall be detailed. 5. During construction, operation, and decommissioning, debris and waste generated shall be recycled to the extent feasible. 6. An onsite Recycling Coordinator shall be designated by the project proponent to facilitate recycling as part of the Maintenance, Recycling and, Trash Abatement and Pest Management Program. 7. The Recycling Coordinator shall facilitate recycling of all construction waste through coordination with contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes. 8. The onsite Recycling Coordinator shall also be responsible for ensuring wastes requiring special disposal are handled according to State and County regulations that are in effect at the time of disposal. 9. Contact information of the coordinator shall be provided to the Air Force and Kern County prior to issuance of building permits. **MM 3.1-1a: Facility Lighting Standards.** The project shall continuously comply with the following: Project facility lighting shall be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting shall be directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs shall not extend below the shields. **MM 3.1-2a: Nonreflective Materials.** Prior to the issuance of building permits, the project proponent shall demonstrate compliance with the following: 1. Any onsite buildings shall be constructed using nonreflective materials, as approved by Air Force and Kern County. 2. Submit plans showing onsite buildings are designed with a color treatment to be complementary to the surrounding desert landscape and use nonreflective materials, such as matte or nonglossy paint, as approved by Air Force and Kern County.	Significant and unavoidable

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		MM 3.5-4a Vegetation Salvage Plan. This measure applies to general vegetation and to special-status plants. (See section 3.5.5 for details).	
Impact 3.1-2: Create a new source of substantial light or glare that would adversely affect day or nighttime views in this area.	Potentially significant	**Implement Mitigation Measures MM 3.1-1a through MM 3.1-3a**	Less than significant
Cumulative	Potentially significant	**Mitigation Measures MM 3.1-1a through MM 3.1-3a**	Significant and unavoidable
3.2 Agricultural Resources			
Impact 3.2-1: The project would conflict with existing zoning for agricultural use or a Williamson Act Contract.	Less than significant	None required	
Impact 3.1-2: Involves other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.	Less than significant	None required	
Cumulative	Less than significant	None required	Less than significant
3.3 Air Quality			
Impact 3.3-1: The project would conflict with or obstruct implementation of the applicable air quality plan.	Significant and unavoidable	**MM 3.3-1a: Fugitive Dust Control Measures.** The project proponent shall ensure construction of the project shall be conducted in compliance with applicable rules and regulations set forth by the Eastern Kern Air Pollution Control District. Dust control measures outlined below shall be implemented where they are applicable and feasible. The list shall not be considered all-inclusive and any other measures to reduce fugitive dust emissions may be required by appropriate agencies to respond to urgent issues on site: 1. Land Preparation, Excavation and/or Demolition. The following dust control measures shall be implemented: a. All soil being actively excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas. Watering shall take place a minimum of three times daily on disturbed soil areas with active operations, unless dust is otherwise controlled by rainfall or use of a dust suppressant. b. After active construction activities, soil shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods. c. All unpaved construction and operation/maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent.	Significant and unavoidable

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		d. All clearing, grading, earth moving, and excavation activities shall cease during periods of winds greater than 25 miles per hour (averaged over 1 hour), or when dust plumes of 20% or greater opacity impact public roads, occupied structures, or neighboring property or as identified in a plan approved by the Eastern Kern Air Pollution Control District. e. All trucks entering or leaving the site will cover all loads of soils, sands, and other loose materials, or be thoroughly wetted with a minimum freeboard height of 6 inches. f. Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times. g. Stockpiles of soil or other fine loose material shall be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust. h. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds. i. Prior to construction, wind breaks (such as chain-link fencing including a wind barrier) shall be installed where appropriate. j. Where acceptable to the Kern County Fire Department, weed control shall be accomplished by mowing instead of disking, thereby, leaving the ground undisturbed and with a mulch covering. k. The project operator shall generally avoiding grading except when elevation changes exceed design requirements. l. When grading is unavoidable, it is to be phased and done with the application of approved chemical dust palliatives that stabilize the earth. m. Where ground is cleared, plant roots must be left in place where possible to stabilize the soil. 2. Site Construction. After active clearing, grading, and earth moving is completed within any portion of the site, the following dust control practices shall be implemented: a. Dust suppressant shall be used on the same day or day immediately following the cessation of activity for a particular area where further activity is not planned. b. Dependent on specific site conditions (season and wind conditions), revegetation shall occur in those areas where planned after installation of the solar panels. c. All unpaved road areas shall be treated with a dust suppressant or graveled to prevent excessive dust. d. The project operator shall use dust suppression measures during road surface preparation activities, including grading and compaction. e. Final road surfaces must be stabilized to achieve a measurable threshold friction velocity (TFV) equal to or greater than 100 centimeters per second (cm/S) or a surface that is greater than or equal to 10 percent of non-erodible elements such as rocks or stones. f. Wind barrier fencing or screening shall be installed, when appropriate. 3. Vehicular Activities. During all phases of construction, the following vehicular control measures shall be implemented: a. On-site vehicle speed shall be limited to 15 miles per hour on unpaved areas within the project site. Vehicles may travel up to 25 miles per hour on stabilized unpaved roads (application of palliatives, gravel, etc. that reduces the erosion potential of the soil) as long as such speeds do not create visible dust emissions.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		b. Visible speed limit signs shall be posted at main ingress point(s) on site and posted at least every 500 feet, readable in both directions of travel along unpaved roads. c. All areas with vehicle traffic such as the main entrance roadway to the project site shall be graveled or treated with dust palliatives so as to prevent track-out onto public roadways. d. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least 6 inches of freeboard. e. Streets adjacent to the project site shall be kept clean, and project-related accumulated silt shall be removed on at a minimum of once daily, or as necessary to prevent substantial offsite fugitive dust releases. The use of either dry rotary brushes (unless prior wetting) or blower devices is prohibited. f. Access to the site shall be by means of an apron into the project site from adjoining surfaced roadways. The apron shall be surfaced or treated with dust suppressants. If site soils cling to the wheels of the vehicles, then a grizzly, wheel-washer, or other such device shall be used on the road exiting the project site, immediately prior to the pavement, to remove most of the soil material from vehicle tires. **MM 3.3-2a: Grading Plan.** Prior to the issuance of grading or building permits, the project proponent shall provide a comprehensive Phased Grading Plan for review by the Air Force and Kern County Planning and Natural Resources Department to reduce fugitive dust emissions resulting from wind erosion at the site. The Phased Grading Plan shall: 1. Identify a comprehensive grading schedule for the entire project site which demonstrates the following: a. **Minimal Grading**. Grading shall be minimized to limit the removal of topsoil and creation of loose soils. Only in areas where drainage improvements, structural foundations (e.g., inverter/transformer pads), service roads, and leveling of severe grades need to occur will grading that removes and recompacts the soil surface occur. Dust palliatives and water shall be immediately applied following any grading. b. **Dust Palliatives**. Application of dust palliatives or water shall be applied throughout project construction when required to help reduce dust, especially during periods of high winds, and shall include use of (1) an eco-safe, biodegradable, liquid copolymer shall be used to stabilize and solidify any soil; and (2) A hydro mulch mixture composed of wood fiber mulch and an Environ-Mend binder may also be applied, where real-time weather conditions dictate that additional measures are necessary. c. **Water Suppression**. Water trucks shall transit across the project site and construction access roads to suppress the fugitive dust from disturbed soils on roads and active working areas on a regular and as needed basis. 2. Minimize all grading activities to those areas necessary for project access and installation of solar panels and other associated infrastructure associated with the solar facility. Construction shall commence on areas that have undergone initial grading within 20 calendar days. 3. Identify, in addition to those measures required by the Eastern Kern Air Pollution Control District, all measures being undertaken during construction activities and operational activities to ensure dust being blown off site is minimized. Measure may include, but are not limited to: a. Increased use of water and or use of dust suppressant.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		b. Pre-seeding and/or use of wood chips as permitted by the EKAPCD c. Construction of dust screening around the project site. d. Limit work hours to days where the wind speed is below 25 miles per hour. Implement High Wind Event Dust Plan approved by EKAPCD if performing in high winds including additional minimization measures. e. Obtain and Implement all requirements of the EKAPCD Dust Plan and/or Permit which may include monitoring of offsite emissions. 4. After construction is complete, the owner or operator of the site shall ensure the following activities are maintained to reduce dust generation during normal operations. a. Sites undergoing weed abatement activity shall not disrupt the soil to the extent that visible dust is carried by wind except where weed abatement is directed by a fire prevention/control agency. b. Travel on unpaved roads will be limited to fewer than 25 vehicle trips per day and at speeds between 5 and 35 miles per hour unless dust palliatives or frequent water is applied to the road surface. 5. Measures needed to control emissions from vehicle and equipment exhaust are to comply with the following: a. All stationary and portable engines must be certified to the appropriate USEPA Tier rating and CARB Executive Order emission standards. All new stationary and portable engines (including off-road equipment) must meet Tier IV emissions rating. b. CARB Fleet requirements for in-use off road equipment rated 25 hp or greater (construction equipment) and on-road diesel fueled vehicles with a gross vehicle weight greater than 10,000 pounds (semis, trucks, buses) shall limit idling to no more than 5 minutes when not actively in use. A vehicle may be allowed to idle for longer periods provided idling is necessary for safe operation of the vehicle or safety of the vehicle operator (emergency vehicles, air conditioning during excessive heat warnings, heating when temperature is below freezing). c. The equipment must be registered under Portable Equipment Registration Program (PERP) or Diesel Off-road Online Reporting System (DOORS) or maintain a local permit. The proponent/contractor shall be responsible for maintaining PERP/DOORS registration and notifying the Air Pollution Control District of any portable engines or generators on site. d. All equipment and vehicles shall only use gasoline, diesel, or alternative fuels that meet California Air Resources Board (CARB) certification specifications for ultra-low sulfur content and aromatic hydrocarbon content requirements. **MM 3.3-3a: Construction Equipment Standards.** The project proponent and/or its contractors shall implement the following measures during construction of the project to reduce equipment exhaust: 1. All equipment shall be maintained in accordance with the manufacturer's specifications. 2. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes. 3. Electric equipment shall be used whenever possible in lieu of diesel or gasoline-powered equipment. 4. Use only gasoline, diesel, or alternative fuels that meet CARB certification specifications for ultra-low sulfur content and aromatic hydrocarbon content requirements.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		5. All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOx emissions. 6. On-road and off-road diesel equipment shall use diesel particulate filters (or the equivalent) if permitted under manufacturer's guidelines, or maintain and use all control equipment as listed on the CARB Executive Order for the engine as issued pursuant to 13 CCR 2420. 7. Prohibit the use of heavy-equipment during first- or second-stage smog alerts and suspend all construction activities during second-stage smog alerts. 8. Utilize existing power sources (i.e., power poles) when available. This measure would minimize the use of higher polluting gas or diesel generators. 9. Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use to the extent feasible. 10. Require that trucks and vehicles in loading or unloading queues have their engines turned-off when not in use. 11. Off-road equipment engines over 50 horsepower shall be Tier 2 certified or higher (unless Tier 2 equipment has been determined to not be available). 12. No vehicle or engines may idle for more than 5 consecutive minutes except to ensure safe operation of the vehicle or safety of the vehicle operator. 13. All construction-related equipment rated higher than 25hp, including heavy-duty equipment, motor vehicles, and portable equipment, shall have current registration (PERP of DOORS) with CARB or local air permits. **MM 3.3-4a: Onsite Idling Standards.** These measures should be required to ensure the reduction of public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles: 1. The driver shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location. **MM 3.3-5a: Dust Control.** The project proponent shall continuously comply with the following measures to control fugitive dust emissions during project operations and construction activities: 1. Increase handling moisture content of graded soils from the typical of 15 percent to 20 percent during construction activities. 2. Reduce speed of road grading by motor graders and rollers from typical 7.1 miles per hour (mph) to 5 mph. 3. Prior to construction, onsite roads that will have the greatest extent of onsite travel shall be graveled. 4. Use a dust suppressant such as magnesium chloride, polymer, or similar, to the extent feasible, including on gravel roads. **MM 3.3-6a: Onsite Emissions Control.** The project proponent shall continuously comply with the following measures during construction and operations to control emissions from onsite dedicated equipment (equipment that would remain onsite each day): 1. All onsite off-road equipment and on-road vehicles for operation and maintenance shall meet the recent CARB engine emission standards or alternatively fueled construction equipment, such as compressed natural gas, liquefied gas, or electric, as appropriate. Use only gasoline, diesel, or alternative fuels that	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		meet CARB certification specifications for ultra-low sulfur content and aromatic hydrocarbon content requirements. 2. All equipment shall be turned off when not in use, where feasible. Engine idling of all equipment shall be minimized to less than 5 minutes excepting safety requirements. 3. All equipment engines shall be maintained in good operating condition and in tune per manufacturer's specification. **MM 3.3-7a: Coating Requirements.** The developer shall comply with**:** 1. The provisions of Eastern Kern Air Pollution Control District Rule 410.1A – Architectural. 2. Coatings, during the construction of all buildings and facilities. Application of architectural coatings shall be completed in a manner that poses the least emissions impacts whenever such application is deemed proficient. 3. The developer shall comply with the provisions of Eastern Kern Air Pollution Control District Rule 410.5 during the construction and pavement of all roads and parking areas within the Project area. Specifically, the developer shall not allow the use of: a. Rapid-cure cutback asphalt b. Medium-cure cutback asphalt c. Slow-cure cutback asphalt; and d. Emulsified asphalt **MM 3.3-8a: Erosion Control Measures.** The project proponent shall implement the following wind erosion reduction measures to comply with EKAPCD Rules 401 and 402 during strong wind events. 1. Sand fences shall be used to capture sand deposits caused by wind erosion in the southwest portion of the project site. Sand fences should be placed to protect structures, including residences, and other amenities from wind-blown sand. In particular, sand fencing should be placed along Trotter Avenue. 2. Install permanent fencing with a minimum 50 percent porosity and at least 6 feet in height in those areas immediately west and west-southwest of permanent existing residences prior to vegetation removal/soil disturbance within 1,000 feet of the residence. 3. In areas where grading will occur, temporary construction fences (with minimum 50 percent porosity and at least 4 feet high) shall be installed every 200-300 feet perpendicular to the prevailing wind in a manner to reduce fugitive dust from leaving the area being graded. Depending on the use and effectiveness of water and dust suppressants, install additional temporary fencing with tighter spacing as necessary. **MM 3.3-9a: Operational/Permanent Wind Erosion Reduction.** The project proponent shall continuously comply with the following measures during operation to control wind erosion: 1. Install permanent fencing with a minimum 50% porosity and at least 6 feet in height along the project boundary along Lone Butte and Trotter. If significant sand movement is observed on site, additional sand fences should be placed within the site to reduce movement and protect onsite structures, including photovoltaic arrays, from wind-blown sand. As sand deposits grow, the sand deposits shall be planted with vegetation to reduce further erosion. 2. Prepare and submit a Fugitive Dust Emission Control Plan pursuant to EKAPCD Rule 402 Section V.D.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		3. Apply for and obtain EKAPCD Authority to Construct / Permit to Operate prior to conducting any work on the project site. 4. Prepare a Fugitive Dust Emission Monitoring Plan, which shall include installation of onsite PM10 air monitors for a minimum of 5 years, as required by EKAPCD, to ensure effectiveness of dust mitigation measures or propose alternative PM monitoring plan using USEPA Method 9 Visible Emissions Evaluation or other approved opacity monitoring methods. Per EKAPCD guidelines, the operator of a facility may petition to cancel District PTO, in the event that 5 years of data demonstrate " (upwind/downwind concentration difference is 50-µg/m3 or less [based on 1-hour averages]).	
Impact 3.3-2: The proposed projects could violate an applicable air quality standard or contribute substantially to an existing or projected air quality violation.	Significant and unavoidable	Mitigation Measures MM 3.3-1a through MM 3.3-9a	Significant and unavoidable
Impact 3.3-3: Construction and operation of the proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors).	Significant and unavoidable	Mitigation Measures MM 3.3-1a through MM 3.3-9a	Significant and unavoidable
Impact 3.3-4: Construction and operation of the proposed project could expose sensitive receptors to substantial pollutant concentrations.	Potentially significant	**MM 3.3-10a**: **Valley Fever.** Prior to ground disturbance activities, the project proponent shall provide a "Valley Fever Training Information Packet" and conduct training sessions for all construction personnel. A copy of the handout and a schedule of education sessions shall be provided to the Kern County Planning and Natural Resources Department. All evidence of the training session(s) and handout(s) shall be submitted to the Kern County Planning and Natural Resources Department on a monthly basis. Multiple training sessions may be conducted if different work crews come to the site for different stages of construction; however, all construction personnel shall be provided training prior to beginning work. The evidence submitted to the Kern County Planning and Natural Resources Department regarding the "Valley Fever Training Handout" and Session(s) shall include the following: 1. A sign-in sheet (to include the printed employee names, signature, and date) for all employees who attended the training session. 2. Distribution of an information packet that includes educational information regarding the health effects of exposure to criteria pollutant emissions and Valley Fever; symptoms of exposure; and instruction for reporting cases of flu-like or respiratory illness symptoms to the Site Safety Officer. Those with persistent systems lasting more than 3 days shall be recommended to seek immediate medical advice. 3. Training on methods that may help prevent Valley Fever infection.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		4. A demonstration to employees on how to use personal protective equipment, such as respiratory equipment (masks), to reduce exposure to pollutants and facilitate recognition of symptoms and earlier treatment of Valley Fever. Though use of the equipment is not mandatory during work, the equipment shall be readily available and shall be provided to employees for use during work, if requested by an employee. Proof that the demonstration is included in the training shall be submitted to the county. This proof can be via printed training materials/agenda, DVD, digital media files, **or photographs.**	
Cumulative	Significant and unavoidable	Mitigation Measures MM 3.3-1a through MM 3.3-9a	Significant and unavoidable
3.4 Air Space Management and Use			
Impact 3.4-1: The project is located within the adopted Kern County Airport Land Use Compatibility Plan and could result in a safety hazard for people residing or working in the project area.	Less than significant	**MM 3.4-1a: Frequency Management.** Prior to the operation of the solar facility, the developer shall consult with the Air Force to identify the appropriate Frequency Management Office personnel to coordinate the use of telemetry to avoid potential frequency conflicts with military operations. **MM 3.4-2a: Federal Aviation Administration.** Prior to issuance of building permits: 1. The developer shall submit Form 7460-1 (Notification of Proposed Construction or Alteration) to the Federal Aviation Administration, in the form and manner prescribed in Code of Federal Regulation 77.17; 2. The developer shall also provide documentation to Air Force demonstrating that the Federal Aviation Administration has issued a "Determination of No Hazard to Air Navigation." This documentation shall include written concurrence from the military authority responsible for operations in the flight area depicted in the Kern County Zoning Ordinance Figure 19.08.160 that all project components in the flight area would create no significant military mission impacts. 3. The developer shall also provide documentation to Air Force demonstrating that a copy of the approved form(s) has been provided to the operators of Mojave Air Space and Port.	Less than significant
Impact 3.4-2: The project is located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the project area.	Less than significant	No mitigation measures are required.	Less than significant
Impact 3.4-3: The project could result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.	Less than significant	No mitigation measures are required.	Less than significant
Cumulative	Less than significant	Mitigation Measures MM 3.4-1a and MM 3.4-2a.	Less than significant
3.5 Biological Resources			
Impact 3.5-1: The project would have a substantial adverse	Potentially significant	**MM 3.5-1a: Biological Monitoring.** Prior to the issuance of grading or building permits, the project proponent shall retain a Lead Biologist who has experience with western Mojave Desert wildlife, is familiar with listed and	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
impact, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.		other special status species from the project vicinity, has experience with construction compliance monitoring, and is familiar with the ecosystems on and near the project site to oversee compliance with protection measures for all listed and other special-status species. The Lead Biologist shall be assisted by qualified biological monitors. Resumes for the Lead Biologist and qualified biological monitors shall be submitted and approved by the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resource Manager. The Lead Biologist and/or qualified biological monitors shall be on the project site during construction of perimeter fencing and grading activities throughout the construction phase. The Lead Biologist and qualified biological monitors shall have the right to halt all activities that are in violation of the special-status species protection measures. Work shall proceed only after hazards to special-status species are removed and the species is no longer at risk. The Lead Biologist and qualified biological monitors shall have in her/his possession a copy of all the compliance measures while work is being conducted on the project site. **MM 3.5-2a: Noise Mitigation.** The following measure will be implemented to avoid, minimize and mitigate potential impacts to special-status wildlife from noise: 1. Construction equipment will be restricted from use in areas where biological buffers have been established to protect nests or other potentially noise sensitive resources. Buffers will be removed when nests have fledged or failed, or resource concerns no longer exist. **MM 3.5-3a Worker Environmental Awareness Training and Education Program.** Prior to the issuance of grading or building permits and for the duration of construction activities, within 1 week of employment all new construction workers at the project site, laydown area and/or transmission routes shall attend a Worker Environmental Awareness Training and Education Program (WEATEP), developed and presented by the Lead Biologist. If approved by the Edwards AFB Natural Resource Manager and if in conjunction with discussion by the Lead Biologist a training video may be used in certain cases. The Training and Education shall include: 1. Any employee responsible for the operations and maintenance or decommissioning of the project facilities shall also attend the Worker Environmental Awareness Training and Education Program. 2. The program shall include information on the life history of the desert tortoise and migratory birds. The program shall also discuss the legal protection status of the species, the definition of “take” under the Federal Endangered Species Act. measures the project proponent is implementing to protect the species, reporting requirements, specific measures that each worker shall employ to avoid take of wildlife species, and penalties for violation of the Federal Endangered Species Act. 3. An acknowledgement form signed by each worker indicating that Worker Environmental Awareness Training and Education Program has been completed shall be provided to the Edwards AFB Natural Resource Manager. 4. Construction workers shall not be permitted to operate equipment within the construction areas unless they have attended the Worker Environmental Awareness Training and Education Program. 5. A copy of the audio or video training, as well as a list of the names of all personnel who attended the Worker Environmental Awareness Training and Education Program and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resource Manager. 6. The construction crews and contractor(s) shall be responsible for unauthorized impacts from construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by project permits.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		MM 3.5-4a Vegetation Salvage Plan. This measure applies to general vegetation and to special-status plants. 1. Restoration activities will be conducted in accordance with the revegetation plans prepared by Edwards Air Force Base (Air Force 1994; Air Force 2012) and any new scientifically proven methodology. Monitoring success of restoration efforts will be implemented for a longer period than the standard 5-year monitoring period due to slow recovery rates of revegetated areas in the desert. The revegetation/restoration plan shall be submitted to the Edwards AFB Natural Resources Manager for comment and approval. 2. Priority for revegetation will be given to desert tortoise critical habitat. 3. Project activities that would result in the removal of any vegetation in an area that was previously undisturbed (including areas that were once disturbed and now contain vegetation) may require revegetation/restoration in accordance with the Edwards Air Force Base Revegetation Plan (AFFTC/EM 1994). 4. Lands above underground utilities will be revegetated unless a road needs to be constructed and maintained for access and maintenance activities. 5. This project may impact sensitive plant species including alkali mariposa-lily, desert cymopterus, recurved larkspur, Barstow woolly sunflower, and sagebrush loeflingia. The proponent/contractor shall develop protocols for the surveying, translocating where appropriate, and monitoring of sensitive species in the project area. The survey, translocating, and monitoring protocols shall be documented and submitted to the Edwards AFB Natural Resources Manager for comments and approval prior to initiation of work activities. Survey and monitoring data shall be recorded and submitted to the Edwards AFB Natural Resources Manager.	
		MM 3.5-5a Weed Management. Weed Management will be consistent with the EAFB Integrated Pest Management Plan and will be implemented to reduce the potential for the introduction or increase of invasive plant species during construction, operation and maintenance, and decommissioning of the proposed project. Weed Management will conform to the Integrated Natural Resources Management Plan for areas within the base boundaries and will include measures related to: 1. Equipment cleaning 2. Site soil management 3. Use of weed free products for erosion control 4. Control methods, including both industrial controls and herbicides, identifying specific herbicides and including the Pesticide Use Proposal or a schedule for completing it 5. Schedule of surveys and reporting for invasive weed identification and control, including success criteria and measures to be implemented if criteria are not met. **This plan will be approved by the Air Force, and Kern County prior to the start of construction.**	
		MM 3.5-6a: Raven Management. Prior to grading and construction and after operational, the following measures will be implemented to reduce Raven predation: 1. All trash and food items will be disposed of in common raven-proof containers, and regularly removed from the project site to reduce attraction of common ravens.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		2. Water tanks and trucks will be maintained in good working order and free of leaks so common ravens will not be attracted to standing water. **MM 3.5-7a: Bird Conservation Strategy.** To mitigate for potential impacts to special-status birds and birds protected under the Migratory Bird Treaty Act and California Fish and Wildlife Code during construction activity, the following measures shall be implemented as part of the approval for a grading or building permit: 1. The Migratory Bird Treaty Act (MBTA) protects most birds and their active nests (nests with egg or young). Disturbance of an active bird nest with eggs/fledglings or a burrowing owl burrow is not permitted. 2. The proponent/contractor shall develop protocols for surveying and monitoring of migratory birds during both nesting and non-nesting seasons for all related work activities that may potentially harm/harass migratory birds or their active nests. The survey and monitoring protocols shall be documented and submitted to the Kern County Planning and Natural Resources Department and to the Edwards AFB Natural Resources Manager for comments and approval prior to initiation of work activities. 3. During the avian breeding season (1 February – 31 August), a qualified biologist shall conduct a preconstruction avian nesting survey no more than 3 days prior to initial vegetation clearing. Surveys need not be conducted for the entire project site at one time; they may be phased so that surveys occur within 3 days prior to clearing of specific areas of the site. No pre-construction surveys are required outside of the avian breeding season. 4. The surveying biologist must be qualified to determine the species, status, and nesting stage without causing intrusive disturbance. At no time shall the biologist be allowed to handle the nest or its eggs. The survey shall cover all reasonably potential nesting locations on and within 500 feet of the project site, if feasible—this includes ground nesting species, such as California horned lark and killdeer, all shrubs that could support nests, and suitable raptor nest sites such as nearby trees and power poles. Access shall be granted on private onsite properties prior to conducting surveys on private land. If access is not obtainable, biologists shall survey these areas from the nearest vantage point with use of spotting scopes or binoculars. 5. If construction is scheduled to occur during the non-nesting season (September 1 to January 31), no preconstruction surveys or additional measures are required. 6. If construction begins in the non-breeding season and proceeds continuously into the breeding season, no surveys are required so long as all suitable nesting sites have been cleared from the site during the non-nesting season and no new sites have been created. 7. If active nests are found, the proponent/contractor qualified wildlife biologist will determine an appropriate no-disturbance buffer requirement. If the nest(s) are found in an area where ground disturbance is scheduled to occur, the project operator shall avoid the area either by delaying ground disturbance in the area until a qualified wildlife biologist has determined that the birds have fledged or by relocating the project component(s) to avoid the area. All no-disturbance buffers shall be delineated in the field with visible flagging or fencing material. 8. The applicant shall install power lines in conformance with Avian Power Line Interaction Committee (APLIC) standards for electrocution-reducing techniques as outlined in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC, 2006), and for collision-reducing techniques as outlined in *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC, 2012), or any superseding document issued by APLIC. The applicant shall monitor for new versions of the APLIC collision and electrocution guidelines and update designs or implement new	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		measures as needed during project construction, provided these actions do not require the repurchase of previously ordered power line structures. Bird diverters and anti-electrocution features shall be maintained for the life of the project. Details of design components of bird diverters and anti-electrocution features shall be indicated on all construction plans. 9. No rodenticides shall be used on the property. All uses of herbicidal compounds shall be approved by the Edwards AFB Natural Resources Manager, comply with Edwards AFB reporting requirements, observe label and other restrictions mandated by the United States Environmental Protection Agency, California Department of Food and Agriculture, and state and federal legislation, and be applied by qualified personnel. 10. All meteorological and communication towers shall be of monopole design to avoid the use of guy wires to reduce bird collision, injury, or death. 11. All solar mount poles, fencing poles, or other hollow vertical structures shall be capped immediately after installation to prevent bird entrapment and death 12. The proponent will develop a Bird Conservation Strategy (BCS) using data collected as part of the biological surveys of the site and any data from nearby solar and wind projects that may be relevant. The BSC shall specify one year of post-construction mortality monitoring. 13. The proponent shall develop and implement a wildlife incident reporting program. **MM 3.5-8a: Desert Tortoise Oversight.** The following measures are in accordance with the terms and conditions of the U.S. Fish and Wildlife Service Biological Opinion for: Operations and Activities at Edwards Air Force Base, California (8-8-14-F-14) regarding the effects on the federally threatened desert tortoise and its critical habitat. 1. This project will require oversight by a proponent-provided authorized biologist who is approved by the U.S. Fish and Wildlife Service (USFWS) to implement the USFWS Biological Opinion for: Operations and Activities Edwards Air Force Base, California (8-8-14-F-14). The authorized biologist will oversee construction activities as well as all activities conducted prior to installation of desert tortoise exclusion fencing, and will remain available to respond to maintenance activities as necessary. The proponent shall submit a request for authorized biologist approval to the Kern County Planning and Edwards AFB Natural Resource Manager at least 3 months prior to commencement of project activities. All incidents of non-compliance in accordance with the biological opinion or permit must be recorded and reported to the Kern County Planning and Natural Resources Department and to the Edwards AFB Natural Resource Manager. 2. If the authorized biologist is unable to perform all required monitoring/surveys, the proponent shall provide desert tortoise monitors. Desert tortoise monitors shall be approved by the authorized biologist to monitor project activities within desert tortoise habitat, ensure proper implementation of protective measures, and record and report desert tortoise and sign observations in accordance with approved protocol. The monitors will report incidents of noncompliance in accordance with a biological opinion or permit. The desert tortoise monitors will wait for the authorized biologist to move desert tortoises from harm's way when desert tortoises enter project sites. Prior to the arrival of the authorized biologist, the desert tortoise monitor will monitor the desert tortoises to ensure no harm comes to the animal until an authorized biologist assumes care of the animal. Monitors shall not conduct clearance surveys or other specialized duties of the authorized biologist unless directly supervised by an authorized biologist; "directly supervised" means the authorized biologist has direct voice and sight contact with the monitor.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		The desert tortoise monitor may directly supervise other personnel to assist with surveying for desert tortoises when deemed necessary. 3. Authorized biologists are the only individuals approved to handle desert tortoises on base. However, nothing prohibits any individual from handling a desert tortoise when necessary to protect the safety or health of the animal when it is in immediate danger. 4. All project personnel working in the area shall attend desert tortoise awareness training prior to commencing work or visiting the work site. Training will be provided by the proponent's authorized biologist and documented per the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resource Manager instructions. 5. The *Desert Tortoise Handout* (DT Handout 412 TWPA Release #18150 20180316) shall be distributed to vehicle and equipment drivers accessing the project area and also be posted at the project site. 6. A desert tortoise pre-activity survey by the contractor's authorized biologist is required prior to commencing work. Any sightings of desert tortoises, signs of desert tortoises, or desert tortoise burrows found within the project area shall be reported immediately to the Edwards AFB Natural Resource Manager. 7. In the event that project development or activities would result in the clearing of a large area of suitable desert tortoise habitat, desert tortoises will be relocated from these sites to other habitat. All translocated desert tortoises will be monitored to determine the success of the relocation. Translocation and monitoring will be performed under the direct supervision of the contractor's authorized biologist in coordination with the Edwards AFB Natural Resources Manager. 8. The project work areas will be fenced, flagged, or marked to define the limit of project activities. 9. Vehicles will generally remain on previously established roads and within staging areas and follow flagged off-road routes that have been surveyed or cleared of desert tortoises. When driving off-road, operators will minimize disturbance to vegetation and not exceed 10 miles per hour. All personnel will inspect under vehicles for desert tortoises prior to operating them in desert tortoise habitat. 10. Project activities between dusk and dawn will be confined to areas free of vegetation and cleared of desert tortoises by contractor personnel who are authorized as described above. 11. Open excavations will be checked regularly by the contractor personnel who are authorized as described above will remove any trapped animals. Open excavations will be covered, backfilled, wildlife ramps placed, or fenced at the end of each workday. At the ends of a ditch or trench, a 3: 1 slope will be created to allow wildlife to exit should they become trapped in the ditch or trench. 12. Any pipes stored within the area shall be capped on open ends or elevated at least 12 inches off the ground to prevent entry by desert tortoise or other wildlife. In the event capping is not feasible, materials will be inspected prior to movement to ensure no wildlife is trapped prior to moving materials. Installation of fencing along roadways will be implemented in areas deemed hazardous to desert tortoises to prevent injury or mortality. 13. Records will be kept according to Edwards AFB Natural Resources Manager instructions and submitted monthly to the Kern County Planning and Natural Resources Department and to Edwards AFB Natural Resources Manager regarding incidents of non-compliance with the biological opinion, acres of desert tortoise habitat disturbance, acres of habitat restoration, wildlife sightings, wildlife injury, wildlife mortality, and desert tortoise handling. Submission of Geographic Information System (GIS) deliverables will be per the most current Edwards Air Force Base Standards for GIS Deliveries.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		MM 3.5-9a: Nesting Birds and Raptors. The following survey actions shall be complied with: 1. If construction is scheduled to commence during the non-nesting season (i.e., September 1 to January 31), no preconstruction surveys or additional measures are required. 2. To avoid impacts to nesting birds in the project site, a qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitat within the project site for construction activities that are initiated during the breeding season (i.e., February 1 to August 31). The surveying biologist must be qualified to determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance. a. The raptor survey shall focus on potential nest sites (e.g., cliffs, large trees, windrows) within a 0.5-mile buffer around the project site. b. Surveys shall be conducted no more than 3 days prior to construction activities. c. Surveys shall not be conducted for the entire project site at one time; they must be phased so that surveys occur shortly before a portion of the project site is disturbed. 3. If active nests are found, the proponent/contractor qualified wildlife biologist will determine an appropriate no-disturbance buffer requirement and no construction within the buffer allowed until the Lead Biologist or onsite qualified biological monitor has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the nest). Encroachment into the buffer may occur at the discretion of the Lead Biologist or onsite qualified biological monitor. **MM 3.5-10a: Preconstruction Clearance Surveys.** Preconstruction surveys for desert kit fox, American badger, and Mohave ground squirrel shall be conducted within the project boundaries by the Lead Biologist or qualified biological monitor within 14 days of the start of any vegetation clearing or grading activities. Methodology for preconstruction surveys shall be consistent with standard industry practice for conducting these surveys, and may be conducted simultaneously with preconstruction surveys for desert tortoise and burrowing owl. Surveys shall not be conducted for all areas of suitable habitat at one time; they must be phased so that surveys occur within 30 days of the portion of the project site being disturbed. If any evidence of occupation of the project site by desert kit fox or American badger is observed, a buffer shall be established by a qualified biological monitor that results in sufficient avoidance, as described below: 1. Preconstruction surveys shall be conducted by the Lead Biologist or onsite qualified biological monitors for the presence of American badger or desert kit fox dens within 14 days prior to commencement of construction activities. The surveys shall be conducted in areas of suitable habitat for American badger and desert kit fox, which includes desert scrub habitats. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days prior to that portion of the project site disturbed. If potential dens are observed and avoidance is feasible, the following buffer distances shall be established prior to construction activities (except for use of existing roads by rubber-tired vehicles): a. Desert kit fox or American badger potential den: 30 feet. b. Desert kit fox or American badger active den: 100 feet. c. Desert kit fox occupied natal den (during natal season): 500 feet. Natal season for desert kit fox is January 1 through August 31. Active natal dens may become inactive prior to August 31. The Lead Biologist or qualified biological monitor can determine natal den status through remote camera monitoring, in consultation with CDFW.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		d. If avoidance of the potential dens is not possible, the following measures are required to avoid potential adverse effects to the American badger and desert kit fox: i. If the Lead Biologist or onsite qualified biological monitor determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent American badgers or desert kit foxes from reusing them during construction. ii. If the Lead Biologist or onsite qualified biological monitor determines that potential dens may be active, an onsite passive relocation program shall be implemented for non-natal dens. This program shall consist of determining status of the den (active natal or active non-natal), excluding American badgers or desert kit foxes from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for 7 days to confirm usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. After the Lead Biologist or onsite qualified biological monitor determines that American badgers or desert kit foxes have stopped using the dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent reuse during construction. Passive relocation of natal dens is limited to outside the natal season (January 1 through August 31) or after the Lead Biologist or onsite qualified biological monitor documents that the natal den has become inactive. iii. During fencing, vegetation clearing, and initial grading activities, daily monitoring reports shall be prepared by the onsite qualified biological monitors. The Lead Biologist shall prepare a summary monitoring report documenting the effectiveness and practicality of the protection measures that are in place and making recommendations for modifying the measures to enhance species protection, as needed. The report shall also provide information on the overall activities conducted related to biological resources, including the Worker Environmental Awareness Training and Education Program, preconstruction surveys, monitoring activities, and any observed special-status species, including injuries and fatalities. These monitoring reports shall be submitted to the Kern County Planning and Natural Resources Department and to the Edwards AFB Natural Resources Manager on a monthly basis along with copies of all survey reports. If Mohave ground squirrels are found during pre-construction surveys, measures for avoiding and minimizing impacts to Mohave ground squirrels shall include the following: • Methods demonstrated to be suitable for excluding Mohave ground squirrels from the work area, such as fencing. • Measures and procedures related to regular monitoring of construction for presence of Mohave ground squirrels. • A requirement to immediately cease work if a Mohave ground squirrel occurs in a work area. • Requirements for worker education material as it pertains to Mohave ground squirrels. • Reporting requirements to include providing any reports to the Edwards AFB Natural Resources Manager. • Approved Methods for translocating Mohave ground squirrels occupying areas where avoidance is not feasible. • Identification of suitable Locations for relocating Mohave ground squirrels. **If relocation of Mohave ground squirrel is necessary, the applicant shall coordinate with CDFW and the Edwards AFB Natural Resources Manager.**	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		MM-3.5-11a: Burrowing Owl Surveys and Avoidance/Relocation. 1. No more than 14 days prior to ground-disturbing activities (vegetation clearance, grading), a qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience) shall conduct a pre-construction take avoidance survey on and within 200 meters (656 feet) of the construction zone (where legally accessible) to identify occupied breeding or wintering burrowing owl burrows. 2. The take avoidance burrowing owl survey shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 Staff Report; CDFW, 2012) and shall consist of walking parallel transects 7 to 20 meters (23 to 66 feet) apart, adjusting for vegetation height and density as needed, and noting any burrows with fresh burrowing owl sign or presence of burrowing owls. Note that owl sign can wash away during rain events and may take several days to build back up again. As each burrow is investigated, biologists shall also look for signs of American badger and desert kit fox. Copies of the burrowing owl survey results shall be submitted to the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resources Manager prior to ground-disturbing activities. a. If burrowing owls are detected on site, no ground-disturbing activities shall be permitted within 200 meters (656 feet) of an occupied burrow during the breeding season (February 1 to August 31), unless otherwise authorized by CDFW. During the nonbreeding season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 50 meters (165 feet) from the burrow or as allowed by CDFW. Depending on the level of disturbance and proposed measures, a smaller buffer may be established in consultation with Lead Biologist. b. If avoidance of active burrows is infeasible during the nonbreeding season, then a Burrowing Owl Relocation Plan will be developed in coordination with the Edwards AFB Natural Resources Manager. If the owls are not in danger of direct impact, then the default should always be to allow the owls to decide whether they would like to leave the existing burrow site. A component of this is to provide replacement burrows at a 2:1 ratio in nearby suitable habitat, or verify that suitable unoccupied burrows are available nearby. If the owls must be relocated, then before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and scoping, a qualified biologist shall implement a passive relocation program in accordance with Appendix E (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the 2012 CDFW Staff Report on Burrowing Owl Mitigation (CDFW, 2012). Passive relocation consists of excluding burrowing owls from occupied burrows and providing suitable artificial burrows nearby for the excluded burrowing owls. Three consecutive days of negative game camera results are needed to verify absence. This is further supported, by scoping with an endoscope immediately prior to burrow dismantling. It is important to completely collapse the burrow network when closing the burrow. **MM 3.5.12a: Trench Monitoring Requirements.** During construction and decommissioning of the project, all trenches or holes shall be provided with one or more escape ramps constructed of earthen fill or wooden planks (with a minimum 1-foot in width) for the protection of wildlife species and must be inspected by the Lead Biologist, qualified biological monitor, designated compliance manager, project operator, or contractor prior to being filled. 1. Any such features that are left open overnight will be searched each day and prior to construction activities to ensure no animals are trapped. Work will not continue until trapped animals have moved out of open trenches. Open excavations of any kind created during project activities shall be secured at	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		the end of each day by backfilling, placing a cover over the excavation, installing a temporary 412 CEG/CEVA-approved desert tortoise fence, and/or ramping excavations at a 3:1 slope. 2. All open holes, sumps, and trenches within the Project footprint shall be inspected at the beginning, middle, and end of each day for wildlife. If any animals are found in an excavation, immediately notify 412 CEG/CEVA 3. All trenches, holes, sumps, and other excavations with sidewalls steeper than a 1:3 slope shall be covered, when workers or equipment are not actively working in the excavation, which includes cessation of work overnight, or shall have an escape ramp of earth or a non-slip material (with a minimum 1-foot in width) with a less than 1:3 slope. Where an escape ramp is required, it shall be placed at least every 300 feet. To prevent inadvertent entrapment of wildlife, when covers are required according to the conditions outlined above, a qualified biological monitor or designated compliance manager shall oversee the covering of all excavated, trenches, holes, sumps, or other excavations with a greater than 1:4 slope of any depth with barrier material (such as hardware cloth) at the close of each working day such that wildlife are unable to dig or squeeze under the barrier and become entrapped, or excavations shall have an escape ramp of earth or a non-slip material (with a minimum 1-foot in width) with a less than 1:3 slope. 4. The outer 2 feet of excavation cover, shall conform to solid ground so that gaps do not occur between the cover and the ground and secured with soil staples or similar means to prevent gaps. Each morning, mid-day, the end of each day (including weekends and any other non-work days), and immediately before trenches, holes, sumps, or other excavations are back-filled, a qualified biological monitor or designated compliance manager shall thoroughly inspect for wildlife. If wildlife is observed, all activities in the vicinity shall cease and the onsite qualified biological monitor or Lead Biologist shall be consulted. 5. Trenches, holes, sumps, or other excavations that are covered long term shall be inspected at the beginning of each working day to ensure inadvertent entrapment has not occurred. 6. If any worker discovers that wildlife has become trapped, all activities in the vicinity shall cease and Lead biologist or the onsite qualified biological monitor shall be notified immediately. Project workers guided by the Lead Biologist or qualified biological monitor shall allow the trapped wildlife to escape unimpeded before activities are allowed to continue. If the entrapped animal is a federal- or state-listed species and an ITP has been acquired by the project proponent for that species or the species is covered by an existing biological opinion (BO), only a Designated Biologist and/or Authorized Biologist as defined in the terms of the ITP(s) or BO may capture and relocated the animal in accordance with the project ITP or BO provisions. If the entrapped animal is a Federal- or State-listed species and an ITP or BO has not been acquired by the project proponent for that species, the project proponent should contact the appropriate wildlife agency immediately. 7. A log shall be kept and provided to the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resources Manager monthly during construction and decommissioning indicating compliance.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.5-2: The project would have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.	Potentially significant	Mitigation Measures MM 3.5-1a through MM 3.5-12a	Less than significant
Impact 3.5-3: The project would have a substantial adverse impact on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	Potentially significant	Mitigation Measures MM 3.5-1a and MM 3.5-3a	Less than significant
Impact 3.5-4: The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	Less than significant	Mitigation Measures MM 3.5-1a through MM 3.5-12a	Less than significant
Impact 3.5-5: The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	Potentially significant	**MM 3.5-13a: Joshua Tree Woodland Preservation.** If avoidance of Joshua tree woodland (defined as areas with 10 percent or more of coverage by Joshua tree) is not feasible, then a Joshua Tree Woodland Preservation Plan, approved by the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resources Manager, shall be required. The plan shall detail the number of acres Joshua trees woodland to be removed and outline a compensatory mitigation approach based on one or a combination of the following options: (1) payment of an in lieu fee to or purchase of mitigation credits from a third-party organization; or (2) the purchase of mitigation lands at a minimum 1:1 ratio for each acre of impacted Joshua tree woodlands. If purchase of mitigation land is pursued, the following shall be completed: (1) a deed restriction, conservation easement, or similar instrument shall be established on the mitigation land; (2) a management plan to maintain habitat conditions on the site must be prepared and implemented; and (3) a non-wasting endowment sufficient to implement the management plan must be provided. The mitigation lands shall provide habitat at a 1:1 ratio for impacted Joshua tree woodlands, comparable to the woodlands to be impacted by the project (e.g., similar abundance and size of Joshua trees, similar levels of disturbance or habitat degradation, etc.). The management plan shall specify maintenance and monitoring requirements for the preserved land. Suitable mitigation lands provided for other resources may be used for Joshua tree woodland mitigation.	Less than significant
Impact 3.5-6: The project would conflict with the provisions of an	Less than significant	None required	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.			
Cumulative	Potentially significant	Mitigation Measures MM 3.5-1a through MM 3.5-13a	Less than significant
3.6 Cultural and Paleontological Resources			
Impact 3.6-1: The project would cause a substantial adverse change in the significance of a historical or unique archaeological resource.	Potentially significant	**MM 3.6-1a Consultation Agreement and Cultural Resources Management Plan.** The Cultural Resources Manager (CRM) for archaeology at Edwards Air Force Base in accordance with 36 CFR 800.16(y) has determined that the development of a commercial Solar Enhanced Use Lease (EUL) project is a federal undertaking with the potential to adversely affect cultural resources including archaeological sites. The EUL consists of two separate components, the power generation facility located on Edwards AFB and not to exceed 4,000 acres in size, and the gen-tie route options located off-base that will be used to transmit the generated power to a hub connected to the electrical grid up to 14 miles distant. As such, the entire project is subject to the Section 106 process with Edwards AFB acting as the lead agency for Section 106 consultation and Kern County as the lead agency for AB 52 consultation. Pursuant to 36 CFR 800.2 the Section 106 consultation will include the California State Historic Preservation Officer (SHPO), and federal and non-federally recognized tribes. The CRM will also seek additional consulting or interested parties consistent with 36 CFR 800.2(c)(5). Collectively the SHPO, Kern County, private land owners, the EUL developer, tribes, consulting and interested parties will be from here forward referred to as stakeholders. Because identification of historic properties/historical resources and adverse effects/significant impacts under Section 106 of the NHPA/CEQA, respectively, is complete, the CRM will enter into a Memorandum of Agreement (MOA) with the State Historic Preservation Officer and consulting parties according to 36 CFR 800.6(b) and (c). The MOA shall identify the actions required to minimize and resolve adverse effects, including the requirement for preparation of a Historic Properties Treatment Plan (HPTP). The HPTP will require and guide implementation of MM 3.6-2a through MM 3.6-7a for the Proposed Action and Alternatives, and MM 3.6-1b through MM 3.6-4b, and MM-3.6-8b for the gen-tie; these mitigation measures provide performance standards and feasible mitigation to ensure that impacts to cultural resources will be less than significant. The HPTP will outline the procedures for treatment of known historic properties/historical resources and inadvertent discoveries, as well as archaeological monitoring protocols, and outline the requirements for retention of a Secretary of Interior qualified archaeologist to implement mitigation, as appropriate. Development of the MOA and HPTP and in executing the Section 106 process in consultation with all stakeholders ensures that Edwards AFB will fulfill its Section 106 obligations and allow a Record of Decision to be issued, and will ensure that the County's CEQA obligations are satisfied for mitigating significant impacts to a level below significance. The reports documenting the implementation of the HPTP shall be submitted to the Kern County Planning and Development Director and Southern San Joaquin Valley Archaeological Information Center at California State University, Bakersfield, and to the CRM.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		MM 3.6-2a: Data Recovery and Avoidance. Where preservation in place of a significant archaeological resource (including Unique Archaeological Resources as defined in CEQA) is not feasible, a qualified archaeologist, in consultation with the Cultural Resource Manager (CRM), County of Kern, consulting tribes, and the project applicant, shall complete archaeological data recovery. This excludes archaeological resources found to contain human remains and/or funerary objects or sacred objects, which will be treated according to the NAGPRA Plan of Action. The standard for completion of data recovery may vary for individual archaeological sites, but is understood herein to be collection of a statistically representative sample of the archaeological deposits such that data redundancy is achieved and the unique properties of the archaeological sites are addressed. Implementation of data recovery mitigation shall include the following steps: 1. In accordance with the requirements of mitigation measure (MM) 3.6-2, prepare a research design and archaeological data recovery plan prior to project-related ground disturbance for the recovery of resources in unavoidable sites that will capture those categories of data for which the site is significant, and implement the data recovery plan. 2. The data recovery phase shall focus on recovering archaeological data sufficient to mitigate the destruction of a portion or the entire site within the area of potential effects (APE). 3. If, in the opinion of the qualified archaeologist and in light of the data available, the significance of the site is such that data recovery cannot capture the values that qualify the site for inclusion on the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR), the applicant shall reconsider project plans in light of the high value of the cultural resource, and implement more substantial modifications to the proposed project that shall allow the site to be preserved intact, such as project redesign or capping the site with fill soil. 4. Standard archaeological collection and/or excavation units may be used, with methods consistent with those employed during previous investigations in the region and with Secretary of Interior's standards. Following completion of the excavations, all cultural materials shall be washed, cataloged, and analyzed. Technical analyses may include artifact analysis, radiocarbon dating, obsidian hydration, pollen and protein residue, and other analyses as needed to describe the cultural materials and archaeological deposits. Prior to artifact processing, the consulting tribes will be afforded the opportunity to identify objects/materials that should not be exposed to washing and certain kinds of destructive analyses and that may be treated according to separate, culturally-specific and appropriate methods and disposition. A data recovery report shall be prepared and filed with the CRM, and the California Historical Resources Information System Information Center at California State University, Bakersfield. 5. The CRM shall provide for the permanent curation of recovered materials from Edwards Air Force Base (AFB) property. Curation does not negate artifact relocation described under MM 3.6-7a, rather artifact relocation and reburial will be the preference whenever possible. For archaeological sites considered individually eligible for NRHP/CRHR listing (or considered contributors to the Bissell Basin Archaeological District) that can be avoided, reasonable protective measures shall be provided, including protective fencing around an avoided resource with an appropriate buffer, silt fencing to avoid indirect effects through project-related runoff, and other measures as applicable. In certain instances, avoidance through capping using sterile fill matrix, use of rubber mats, or other measures may be deemed appropriate to achieve avoidance. All decisions regarding the specific measures used to achieve preservation in place and capping will be the result of collaboration amongst consulting parties and the Air Force.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		General avoidance and capping are two available avoidance measures on Edwards AFB property and on lands under County of Kern jurisdiction. These forms of avoidance satisfy CEQA Guidelines Section 15125.4(b)(3). **MM 3.6-3a: Consultation Agreement and Cultural Resource.** Archaeological and Native American Resources Monitoring. Archaeological and Native American monitoring are both subject to consultation with the stakeholders under Section106. As such, the requirements of various stakeholders must be considered and accommodation made wherever feasible. Therefore, specific archaeological and Native American monitoring details cannot be included herein. However, at a minimum it is expected that the developer shall retain a qualified archaeological monitor and a Native American monitor for project-related ground disturbing activities for the purpose of identifying and avoiding adverse effects to significant archaeological resources. The HPTP (MM 3.6-1a) shall provide details on archaeological and Native American monitoring, including monitor rotation schedules, lines of authority and communication, monitoring procedures and protocols, and documentation. Ground-disturbing activities include, but are not limited to, brush clearance, grubbing, excavation, trenching, grading, and drilling, or other activities deemed appropriate for monitoring identified in the consultation process. Areas requiring monitoring and the level of monitoring shall be developed by the Edwards AFB Cultural Resources Manager in coordination with the Applicant, the qualified archaeologist and consulting tribes, and shall be detailed in the MOA and HPTP for resources on Edwards AFB (as required by Mitigation Measure MM 3.6-1a). Any archaeological monitors shall be, or work under the direct supervision of, a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's standards for professional archaeology and shall be approved by the Air Force. The monitors shall be familiar with the types of historical and prehistoric resources that could be encountered within the project area. The archaeological monitor shall ensure that personnel performing ground-disturbing activities are displaying the appropriate decal on their hardhat demonstrating their CR Awareness training under Mitigation Measure MM 3.6-5a. The archaeological monitors shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. The archaeological monitors shall be present on the project site according to a schedule as detailed in the MOA and HPTP for resources on Edwards AFB (as required by Mitigation Measure MM 3.6-1a). The monitors shall maintain a daily log of activities, which will be appended to a final monitoring report that shall be submitted to the Edwards AFB Cultural Resources Manager, Kern County Planning and Natural Resources Department, and Southern San Joaquin Valley Archaeological Information Center. Specific monitoring reporting procedures shall be detailed in the MOA and HPTP for resources on Edwards AFB, (as required by Mitigation Measure MM 3.6-1a). **MM 3.6-4a: Inadvertent Discoveries.** During project-level construction, operation and maintenance, and decommissioning, should cultural resources be discovered, all activity within 100 feet of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find. The Cultural Resource Manager or the Kern County Planning and Community Development Department shall also be contacted. If the qualified archaeologist, in consultation with the Cultural Resource Manager or Kern County Planning and Community Development Department and Consulting Native American tribes, determines the resource is significant (i.e., qualifies as a Historic Property, Historical Resource, unique archaeological resource, TCR), or a contributor to the Bissell Basin Archaeological District, then the archaeologist shall determine, in consultation with the Cultural Resource Manager or Kern County Planning and Community Development Department, appropriate avoidance measures or other appropriate mitigation. Preservation in place shall be the preferred manner of mitigation to avoid effects to significant cultural resources. If it is demonstrated that resources cannot be feasibly avoided, the qualified archaeologist shall implement the provisions for mitigative	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		treatments detailed in the MOA (as required by Mitigation Measure MM 3.6-1a). Work shall not resume within 100 feet of the discovery until permission is received from the Cultural Resource Manager (solar array project area) or Kern County Planning and Community Development Department (gen-tie line route project area). In the event of inadvertent discovery of human remains or potential funerary objects or sacred objects, all work shall be halted within a 100-foot radius and temporary protective measures shall be implemented. On non-federally owned land, the project proponent shall immediately halt work, contact the Kern County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.4 (e)(1) of the California Environmental Quality Act Guidelines. If the County Coroner determines that the remains are Native American, the coroner shall contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by Assembly Bill 2641). The Native American Heritage Commission shall designate a most likely descendent for the remains per Public Resources Code 5097.98. Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et. seq.) directing identification of the next-of-kin will apply. On federally owned land, the Air Force shall be notified and human remains and associated funerary objects shall be treated pursuant to the Native American Graves Protection and Repatriation Act and in accordance with the MOA and HPTP, and the NAGPRA Plan of Action (included as part of the HPTP). **MM 3.6-5a: Worker Cultural Awareness Training Program.** Prior to the commencement of ground-disturbing activities, and for the duration of construction activities, a Worker Cultural Awareness Training Program shall be provided to all construction personnel prior to their commencing work at the project site. 1. The training shall be prepared and conducted by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology. Representatives from the consulting Native American tribes shall also provide training, at their discretion. The training may be in the form of a video. 2. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural training. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker. 3. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Air Force Cultural Resources Manager. The purpose of the Cultural Awareness Training Program shall be to inform and train construction personnel of the types of cultural resources that may be encountered during construction, and to bring awareness to personnel of actions to be taken in the event of a cultural resources discovery. This may include: a discussion of applicable cultural resources statutes, regulations and related enforcement provisions; an overview of the prehistoric and historic environmental setting and context, as well as current cultural information regarding local tribal groups; samples or visuals of artifacts that might be found in the project area; a discussion of what prehistoric and historic archaeological deposits look like at the surface and when exposed during	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		construction; and procedures to be followed in the event of an inadvertent discovery, as specified by the MOA and HPTP (MM 3.6-1a). **MM 3.6-6a Public Outreach and Education Program.** The MOA and HPTP (MM 3.6-2) shall outline the specific requirements for implementation of a Public Outreach and Education Program. The goal of this program will be to provide members of the public, including tribal members, media for interacting with the prehistoric aboriginal past of the Bissell Basin and surrounding region. Media platforms will vary, but will include hard media, such as story-telling displays, displays of archaeological material in an interpretive format (may include traveling displays), and digital media (e.g., internet based content). The HPTP will identify parties responsible for contributing content and producing deliverables. **MM 3.6-7a Relocation of Cultural Material.** The MOA and HPTP (MM 3.6-2) shall outline the specific requirements and methods for implementation of an artifact relocation plan, a plan that shall be developed prior to project implementation and shall be carried out prior to construction for previously identified resources and during construction for inadvertent discoveries. The HPTP will specify the decision making process required to identify artifacts in field settings suitable for relocation, versus those that require formal relocation or repatriation. The CRM and consulting tribes have determined that not all cultural material that will be impacted by project construction requires formal curation. Moreover, recognizing that these artifacts will be disturbed during construction, the collection of disturbed artifacts and placement in a precisely recorded nearby location is considered suitable treatment of these materials, particularly during archaeological and tribal monitoring of construction.	
Impact 3.6-2: The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Potentially significant	**MM 3.6-8a: Paleontological Resources Mitigation and Monitoring Plan.** The developer shall retain a qualified paleontologist to prepare a Paleontological Resources Mitigation and Monitoring Plan for implementation during construction. The minimum requirement for professional paleontological work is a 4-year undergraduate program and Master of Science degree, although a doctoral degree may be required for certain specialties; a qualified paleontologist is one that has experience in research, field, and laboratory methods for paleontological resources, including experience in fossil salvage, stratigraphy, fossil preparation, and identification, with experience in California. The Paleontological Resources Mitigation and Monitoring Plan shall be submitted to the Air Force for review and approval prior to the start of grading or construction and shall include the following: 1. Procedures for the discovery, recovery, and salvage of paleontological resources encountered during construction, if any, in accordance with standards for recovery established by the Society of Vertebrate Paleontology. 2. Verification that the developer has an agreement with a recognized museum repository (such as the Natural History Museum of Los Angeles County), for the disposition of recovered fossils and that the fossils shall be prepared prior to submittal to the repository as required by the repository (e.g., prepared, analyzed at a laboratory, curated, or cataloged). 3. Description of monitoring reports that will be prepared, which shall include daily logs and a final monitoring report with an itemized list of specimens found to be submitted to the Air Force and the Natural History Museum of Los Angeles County within 90 days of the completion of monitoring. **MM 3.6-9a: Worker Paleontological Resources Awareness Training Program.** Prior to the commencement of ground-disturbing activities, and for the duration of construction activities, a Worker Paleontological Awareness Training Program shall be provided to all construction personnel prior to their commencing work at the project site. The training may be performed in concert with the archaeological/cultural resources training (MM 3.6-4a) at the onset of the project. The training shall be prepared and conducted by a qualified paleontologist. The training may be in the form of a video. The training may be discontinued when	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		ground disturbance is completed or suspended, but must resume when ground-disturbing activities resume. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural training. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Edwards AFB Cultural Resource Manager. The purpose of the Paleontological Awareness Training Program shall be to inform and train construction personnel of the types of paleontological resources that may be encountered during construction, and to bring awareness to personnel of actions to be taken in the event of a paleontological resources discovery. This may include: a discussion of applicable paleontological resources statues, regulations and related enforcement provisions; samples or visuals of fossils that might be found in the project area; implementation of the Paleontological Resources Mitigation and Monitoring Plan; and procedures to be followed in the event of an inadvertent discovery. **MM 3.6-10a: Paleontological Resources Monitoring.** The developer shall provide for a qualified paleontologist or an individual working under direct supervision of a qualified paleontologist to monitor construction activities in areas where deeper excavations may be needed (greater than 10 feet). The duration and timing of the monitoring, which shall be set in the Paleontological Resources Mitigation and Monitoring Plan, shall be determined by the qualified paleontologist, in consultation with the Air Force and based on the grading plans. Initially, all excavation or grading activities deeper than 10 feet shall be monitored. However, during the course of monitoring, if the paleontologist can demonstrate that the level of monitoring should be reduced, the paleontologist, in consultation with the Air Force, may adjust the level of monitoring to circumstances warranted. If a resource is encountered, the monitor will implement the procedures of the Paleontological Resources Mitigation and Monitoring Plan. If recovery of a large or unusually productive fossil occurrence is necessary, the following actions shall be taken: 1. The paleontological monitor shall immediately notify the project developer, who shall contact the Air Force. 2. Construction activities in the immediate vicinity of the site shall stop until authorization for work to continue is provided by the Air Force. 3. Treatment and subsequent donation of fossils to a repository, along with the preparation of a report documenting the absence or discovery of fossil-related resources will be performed in accordance with the Paleontological Resources Mitigation and Monitoring Plan.	
Impact 3.6-3: The project would disturb human remains, including those interred outside of formal cemeteries.	Potentially significant	Implement Mitigation Measure MM 3.6-4a: Inadvertent Discoveries.	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.6-1a through MM 3.6-11a	Less than significant
3.7 Geology, Minerals, and Soils			
Impact 3.7-1: The project would expose people or structures to potential substantial adverse effects, including the risk of loss,	Less than significant	**MM 3-7.1a: Conduct Geotechnical Study.** Prior to the issuance of building or grading permits for the project, the project proponent shall conduct a full geotechnical study to evaluate soil conditions and geologic hazards on the project site and submit it to the Kern County Public Works Department for review and approval.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.		**1.** The geotechnical study must be signed by a California-registered and licensed professional engineer and must include, but not limited to, the following: a. Location of fault traces and potential for surface rupture and groundshaking potential; b. Maximum considered earthquake and associated ground acceleration; c. Potential for seismically induced liquefaction, landslides, differential settlement, and mudflows; d. Stability of any existing or proposed cut-and-fill slopes; e. Collapsible or expansive soils; f. Foundation material type; g. Potential for wind erosion, water erosion, sedimentation, and flooding; h. Location and description of unprotected drainage that could be impacted by the proposed development; and, i. Recommendations for placement and design of facilities, foundations, and remediation of unstable ground. 2. The project proponent shall determine the final siting of project facilities based on the results of the geotechnical study and implement recommended measures to minimize geologic hazards. The project proponent shall not locate project facilities on or immediately adjacent to a fault trace. All structures shall be offset at least 100 feet from any mapped fault trace. Alternatively, a detailed fault trenching investigation may be performed to accurately locate the fault trace(s) to avoid sighting improvements on or close to these fault structures and to evaluate the risk of fault rupture. After locating the fault, accurate setback distances can be proposed. 3. The Kern County Public Works Department shall evaluate any final facility siting design developed prior to the issuance of any building or grading permits to verify that geological constraints have been avoided.	
Impact 3.7-2: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.	Less than significant	None required	Less than significant
Impact 3.7-3: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic related ground failure, including liquefaction.	Less than significant	None required	Less than significant
Impact 3.7-4: The project would result in substantial soil erosion or the loss of topsoil.	Less than significant	None required	Less than significant
Impact 3.7-5: The project is located on a geologic unit or soil	Less than significant	None required	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
that is unstable, or that would become unstable as result of the project, and potentially result in onsite or onsite landslide, lateral spreading, subsidence, liquefaction, or collapse.			
Impact 3.7-6: The project is located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.	Less than significant	None required	Less than significant
Impact 3.7-7: The project has soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater.	Less than significant	**MM 3.7-2a: Assess Soil Permeability.** Prior to the issuance of any building permit for the operation and maintenance facilities, the project proponent shall obtain all required permits and approvals from Kern County Environmental Health Services Division, and shall implement all required conditions regarding the design and siting of the septic system and leach fields. A site specific analysis of soil permeability shall be performed by a California licensed Geotechnical Engineer that demonstrates project soils can adequately support the use of a septic disposal system. A plan shall be submitted to the Kern County Planning and Natural Resources Department indicating siting or the septic system and leach fields as approved by the Kern County Environmental Health Services Division.	Less than significant
Impact 3.7-8: The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	Less than significant	None required	Less than significant
Impact 3.7-9: The project would result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.	Less than significant	None required	Less than significant
Cumulative	Less than significant	None required	Less than significant
3.8 Greenhouse Gas Emissions			
Impact 3.8-1: The project would generate greenhouse gas emissions, either directly or indirectly, that may have an impact on the environment.	Less than significant	None required	Less than significant
Impact 3.8-2: The project could conflict with an applicable plan,	Less than significant	None required	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
policy, or regulation adopted for the purpose of reducing the emissions of GHGs.			
Cumulative	Less than significant	None required	Less than significant
3.9 Hazardous Materials and Safety			
Impact 3.9-1: The project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Potentially significant	**MM 3.9-1a: Hazardous Materials Business Plan.** Prior to the issuance of grading or building permits, the project proponent shall prepare a Hazardous Materials Business Plan and submit it to Kern County for review and approval. 1. The Hazardous Materials Business Plan shall: a. Delineate hazardous material and hazardous waste storage areas. b. Describe proper handling, storage, transport, and disposal techniques. c. Describe methods to be used to avoid spills and minimize impacts in the event of a spill. d. Describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction. e. Establish public and agency notification procedures for spills and other emergencies including fires. f. Include procedures to avoid or minimize dust from existing residual pesticide and herbicide use that may be present on the site. 2. The project proponent shall provide the Hazardous Materials Business Plan to all contractors working on the project and shall ensure that one copy is available at the project site at all times. 3. A copy of the approved Hazardous Materials Business Plan shall be submitted to the Air Force. **MM 3.9-2a: Spill Prevention, Control, and Countermeasure Plan.** Prior to the issuance of grading or building permits by the County and/or a Notice to Proceed from the Air Force, the developer shall prepare and submit a Spill Prevention, Control, and Countermeasure Plan to Kern Count and to the Air Force for review. The plan will be for the storage and use of transformer oil, gasoline, or diesel fuel at the site in quantities of 660 gallons or greater. The purpose of the plan will be to mitigate the potential effects of a spill of transformer oil, gasoline, or diesel fuel. The plan shall include design features of the project that will contain accidental releases of petroleum and transformer oil products from onsite fuel tanks and transformers. **MM 3.9-3a**: **Herbicide Control.** 1. The project proponent shall continuously comply with Edwards Integrated Pest Management Plan and the following: a. The construction contractor or project personnel shall use herbicides that are approved for use in California, and are appropriate for application adjacent to natural vegetation areas (i.e., non-agricultural use. Personnel applying herbicides shall have all appropriate state and local herbicide applicator licenses and comply with all state and local regulations regarding herbicide use. b. Herbicides shall be mixed and applied in conformance with the manufacturer's directions. c. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife. d. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed; and herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. e. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated. 2. The project proponent shall continuously comply with the following: a. The construction contractor or project personnel shall use herbicides that are approved for use in California, and are appropriate for application adjacent to natural vegetation areas (i.e., non-agricultural use. Personnel applying herbicides shall have all appropriate state and local herbicide applicator licenses and comply with all state and local regulations regarding herbicide use. b. Herbicides shall be mixed and applied in conformance with the manufacturer's directions. c. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife. d. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed; and herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. e. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.	
Impact 3.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Potentially significant	Implement Mitigation Measures MM 3.9-1a through MM 3.9-3a, and: **MM 3.9-4a: Asbestos-containing Material.** The project proponent shall continuously comply with the following: 1. In the event that suspect asbestos-containing materials (almost anything other than unpainted metal, glass or wood, to include soil in certain locations/circumstances) are uncovered and/or disturbed during project construction, work at the project site shall immediately halt and an appropriate certified asbestos hazardous materials professional (typically a California Certified Asbestos Consultant) shall be contacted and brought to the project site to make a proper assessment of the suspect materials. 2. All potentially friable asbestos-containing materials shall be removed in accordance with Federal, State, and local laws and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines prior to ground disturbance that may disturb such materials. Per the Asbestos NESHAP "…. prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable ACM." 3. All demolition activities shall be undertaken in accordance with California Occupational Safety and Health Administration standards, as contained in Title 8 of the California Code of Regulations, Section 1529, to protect workers from exposure to asbestos. Materials containing more than 1 percent asbestos shall also be subject to Eastern Kern Air Pollution Control District's regulations. Asbestos in soil is or	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		may be further regulated by California Air Resources Board. Demolition/Renovation shall be performed in conformance with Federal, State, and local laws and regulations, to include the Asbestos NESHAP so that construction workers and/or the public avoid significant exposure to asbestos and asbestos-containing materials.	
		MM 3.9-5a: Herbicide Application. The project proponent shall continuously comply with the following: Herbicides shall be applied in accordance with the current Edwards Air Force Base Integrated Pest Management Plan. Physical, mechanical, or other measures must be used to remove or control weeds. Least hazardous, but effective, herbicides shall be used as a last resort.	
Impact 3.9-3: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.	Potentially significant	None required	Less than significant
Impact 3.9-4: Exposes people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	Less than significant	**MM 3.9-6a: Fire Safety Plan**. Prior to the issuance of grading or building permits, the project proponent shall develop and implement a fire safety plan for use during construction and operation. The project proponent will submit the plan, along with maps of the project site and access roads, to the Kern County Fire Department for review and approval. The fire safety plan will contain notification procedures and emergency fire precautions including, but not limited to the following: 1. All internal combustion engines, both stationary and mobile, shall be equipped with spark arresters. Spark arresters will be in good working order. 2. Light trucks and cars with factory-installed (type) mufflers will be used only on roads where the roadway is cleared of vegetation. These vehicle types will maintain their factory-installed (type) muffler in good condition. 3. Fire rules will be posted on the project bulletin board at the contractor's field office and areas visible to employees. 4. Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials. 5. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires to prevent them from growing into more serious threats. 6. The project proponent shall make an effort to restrict the use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to periods outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.9-1a through MM 3.9-6a	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.10 Infrastructure			
Impact 3.10-1: The project would exceed wastewater treatment requirements of the applicable regional water quality control board.	Potentially significant	**MM 3.10-1a: Coordinate with Utility Service Providers.** Prior to construction, the developer shall coordinate with appropriate utility service providers and related agencies to determine the location of utilities and ensure that adequate wastewater treatments exist. The developer will also incorporate into construction specifications the requirement that the contractor develop a plan to reduce service interruptions. The plan shall be approved by the Air Force and submitted to appropriate utility providers. Utilities to be addressed in the plan shall include, but may not be limited to: water, recycled water, sewer, gas, electricity, telephone, cable.	Less than significant
Impact 3.10-2: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Potentially significant	None required	Less than significant
Impact 3.10-3: Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Less than significant	Mitigation Measure MM 3.10-1a	Less than significant
Impact 3.10-4: The project has sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlement is not needed.	Less than significant	None required	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.10-5: Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.	Potentially significant	Implement Mitigation Measure MM 3.11-1a, and: **MM 3.10-2a: Recycling Coordinator.** During construction, operation, and decommissioning, debris and waste generated shall be recycled to the extent feasible. 1. An onsite Recycling Coordinator shall be designated by the project proponent to facilitate recycling as part of the Maintenance, Recycling and Trash Abatement and Pest Management Program. 2. The Recycling Coordinator shall facilitate recycling of all construction waste through coordination with contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes. 3. The onsite Recycling Coordinator shall also be responsible for ensuring wastes requiring special disposal are handled according to State and County regulations that are in effect at the time of disposal. 4. Contact information of the coordinator shall be provided to Kern County prior to issuance of building permits.	Less than significant
Impact 3.10-6: Fail to comply with federal, state, and local statutes and regulations related to solid waste.	Less than significant	None required	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.10-1a, MM 3.10-2a, MM 3.11-1a, and MM 3.7-2a.	Less than significant
3.11 Land Use			
Impact 3.11-1: The project would conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the projects (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	Less than significant	None required	Less than significant
Cumulative	Potentially significant	**MM 3.11-1a: Decommission Plan.** Except as otherwise agreed to in writing by the Government, Lessee shall, at no cost to the Government: 1. Remove all of the Improvements from the Leased Premises. Lessee shall restore the Leased Premises to a condition substantially similar to that which existed on the Effective Date of the Lease, including but not limited to reestablishment (if applicable) vegetation to control erosion in accordance with Government standards. 2. No later than 3 years prior to the Restoration Deadline, Lessee shall provide to the Government a report prepared by a construction and demolition expert reasonably acceptable to the Government, which report details and estimates the cost of satisfying the Removal and Restoration Obligation (the "Estimated Restoration Costs"), together with a written plan which sets forth how Lessee proposes to discharge its Removal and Restoration Obligation (an "Improvement Removal Report") and establish an	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		escrow account with a commercial escrow holder reasonably satisfactory to the Government and deposit into it the full amount of the Estimated Restoration Costs ("Demolition Reserve Account"). a. The Demolition Reserve Account shall be subject to procedures and controls to be set forth in a written agreement between Lessee, the Government and the escrow holder ("Demolition Reserve Escrow Agreement"). b. If Lessee does not satisfy its Removal and Restoration Obligation on or before the Restoration Deadline ("Restoration Default"), the Government shall be entitled, in addition to other available remedies, to (i) take ownership of the Lessee Improvements without compensation therefore, or (ii) cause the Lessee Improvements to be removed or destroyed, and the Leased Premises to be restored at the expense of Lessee.	
3.12 Noise			
Impact 3.12-1: Expose persons to or generate noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies.	Potentially significant	**MM 3.12-1a: Noise Reduction.** To reduce temporary construction related noise impacts, the following shall be implemented by the project proponent: 1. Equipment staging shall be located in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during construction to the extent practical. The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site, where feasible. 2. The contractor shall ensure all construction equipment is equipped with manufacturers approved mufflers and baffles, where feasible. 3. The construction contractor shall establish a Noise Disturbance coordinator for the project during construction. The Disturbance Coordinator shall be responsible for responding to any complaints about construction noise. The Disturbance Coordinator shall determine the cause of the complaint and shall be required to implement reasonable measures to resolve the complaint. Contact information for the Disturbance Coordinator shall be submitted to the Kern County Planning and Natural Resources Department prior to any ground disturbing activities commence. During all construction or decommissioning phases of the project, the construction contractor shall limit all onsite noise-producing activities to the hours of 6:00 a.m. to 9:00 p.m., Monday through Friday, and to the hours of 8:00 a.m. and 9:00 p.m. on Saturdays and Sunday or as required through the Kern County Noise Ordinance (Municipal Ordinance Code 8.36.020). **MM 3.12-2a: Public Notification**. Prior to commencement of any onsite construction activities (i.e., fence construction, mobilization of construction equipment, initial grading, etc.), the project proponent shall provide written notice to the public through mailing a notice. 1. The mailing notice shall be to all residences within 1,000 feet of the project site, 15 days or less prior to construction activities. The notices shall include: The construction schedule, telephone number and email address where complaints and questions can be registered with the noise disturbance coordinator. 2. A minimum of one sign, legible at a distance of 50 feet, shall be posted at the construction site or adjacent to the nearest public access to the main construction entrance throughout construction activities that shall provide the construction schedule (updated as needed) and a telephone number where noise complaints can be registered with the noise disturbance coordinator. 3. Documentation that the public notice has been sent and the sign has been posted shall be provided to the Air Force and to Kern County.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.12-2: Would the project result in the exposure of persons to, or generate, excessive groundborne vibration or groundborne noise levels.	Less than significant	None required	Less than significant
Impact 3.12-3: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	Potentially significant	Mitigation Measures MM 3.12-1a and MM 3.12-2a	Less than significant
Impact 3.12-4: For a project located within the Kern County Airport Land Use Compatibility Plan (ALUCP), would the project expose people residing or working in the project area to excessive noise levels.	Less than significant	Mitigation Measures MM 3.12-1a and MM 3.12-2a	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.12-1a and MM 3.12-2a	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.13 Public Services			
Impact 3.13-1: The project would result in adverse physical impacts associated with the need for new or physically altered governmental facilities—the construction of which could cause significant environmental impacts—in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services or police protection and law enforcement services.	Less than significant	Implement Mitigation Measure MM 3.9-6a, and: **MM 3.13-1a: Funding for County Fire and Sheriff's Protection.** The project proponent shall implement the following mitigation steps at the project site: 1. For facility operation, the project proponent shall pay for impacts on countywide public protection, sheriff's patrol and investigative services, and fire services at a rate of $28.84 per 1,000 square feet of panel-covered ground for the facility operation and related onsite structures for the entire covered area of the project. The total amount shall be divided by the number of years of operation and paid on a yearly basis. If completed in phases, the annual amount shall be based on the square footage of ground covered by April 30 of each year. The amount shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year for each and every year of operation. Copies of payments made shall be submitted to the Kern County Planning and Natural Resources Department. 2. Written verification of ownership of the project shall be submitted to the Kern County Planning and Natural Resources Department by April 15 of each calendar year. If the project is sold to a city, county, or utility company with assessed taxes that total less than $1,000 per megawatt per year, then they will pay those taxes plus the amount necessary to equal the equivalent of $1,000 per megawatt. The amount shall be paid for all years of operation. The fee shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year. 3. The project proponent shall work with the County to determine how the use of sales and use taxes from construction of the project can be maximized. This process shall include, but is not necessarily limited to, the project proponent obtaining a street address within the unincorporated portion of Kern County for acquisition, purchasing and billing purposes, and registering this address with the State Board of Equalization. The project proponent shall allow the County to use this sales tax information publicly for reporting purposes. 4. Prior to the issuance of any building permits on the property, the project proponent shall submit a letter detailing the hiring efforts prior to commencement of construction; which encourages all contractors of the project site to hire at least 50 percent of their workers from the local Kern County communities. The project proponent shall provide the contractors a list of training programs that provide skilled workers and shall require the contractor to advertise locally for available jobs, notifying the training programs of job availability, all in conjunction with normal hiring practices of the contractor.	Less than significant
Cumulative	Less than significant	Mitigation Measures MM 3.13-1a and MM 3.9-6a	Less than significant
3.14 Socioeconomics and Environmental Justice			
Cumulative	Less than significant	No mitigation measures are recommended to address socioeconomic impacts related to Alternative A, Alternative B, or Alternative C.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.15 Transportation			
Impact 3.15-1: The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	Less than significant	**MM 3.15-1a: Traffic Control Plan.** Prior to the issuance of construction or building permits, the project proponent shall: 1. Prepare and submit a Construction Traffic Control Plan to Kern County Public Works Department-Development Review and the California Department of Transportation offices for District 9, as appropriate, for approval. The Construction Traffic Control Plan must be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and must include, but not be limited to, the following issues: a. Timing of deliveries of heavy equipment and building materials. b. Directing construction traffic with a flag person. c. Placing temporary signing, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic. d. Ensuring access for emergency vehicles to the project sites. e. Temporarily closing travel lanes or delaying traffic during materials delivery, transmission line stringing activities, or any other utility connections. f. Maintaining access to adjacent property. g. Specifying both construction-related vehicle travel and oversize load haul routes, minimizing construction traffic during the AM and PM peak hour, distributing construction traffic flow across alternative routes to access the project sites, and avoiding residential neighborhoods to the maximum extent feasible. 2. Obtain all necessary encroachment permits for the work within the road right-of-way or use of oversized/overweight vehicles that will utilize county maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the approved traffic plan and issued permits shall be submitted to the Kern County Planning and Natural Resources Department and the Kern County Public Works Department-Development Review. 3. Prior to construction, the project proponent shall submit engineering drawings of proposed access road design for the review and approval of the Kern County Public Works Department. 4. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the state and/or Kern County. 5. Submit documentation that identifies the roads to be used during construction. The project proponent shall be responsible for repairing any damage to non-county maintained roads that may result from construction activities. The project proponent shall submit a preconstruction video log and inspection report regarding roadway conditions for roads used during construction to the Kern County Public Work Department-Development Review and the Kern County Planning and Natural Resources Department. 6. Within 30 days of completion of construction, the project proponent shall submit a post-construction video log and inspection report to the County. This information shall be submitted in DVD format. The County, in consultation with the project proponent's engineer, shall determine the extent of remediation required, if any.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.15-2: The project would conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards developed by the County congestion management agency for designated roads or highways.	Less than significant	Implement Mitigation Measure MM 3.15-1a	Less than significant
Impact 3.15-3: The project would substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Potentially significant	Implement Mitigation Measure MM 3.15-1a	Less than significant
Impact 3.15-4: The project would result in inadequate emergency access.	Less than significant	Implement Mitigation Measure MM 3.15-1a	Less than significant
Cumulative	Potentially significant	Implement Mitigation Measure MM 3.15-1a	Less than significant
3.16 Water Resources			
Impact 3.16-1: The project could violate water quality standards or waste discharge requirements.	Potentially significant	Implement Mitigation Measure MM 3.9-1a, and: **MM 3.16-1a: Stormwater Pollution Prevention Plan**. Prior to issuance of a grading permit for construction or decommissioning, the developer shall submit a Stormwater Pollution Prevention Plan to the Kern County Engineering, Surveying, and Permit Services Department that specifies best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sediment and other pollutants from moving offsite and into receiving waters. The requirements of the Stormwater Pollution Prevention Plan shall be incorporated into design specifications and construction contracts. Best management practices categories employed onsite would include erosion control, sediment control, good housekeeping, and post-construction. Best management practices for the construction phase shall include, but not be limited to, those listed below. 1. Erosion Control a. Use of existing roadways to the maximum extent possible b. Limiting grading to the minimum area necessary for construction, operation and decommissioning of the project c. Encourage maintenance of existing topography and limit vegetation disturbance/removal such as through mowing to the maximum extent possible 2. Sediment Control a. Implementing fiber rolls and sand bags around drainage areas and the site perimeter	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		b. Stockpiling and disposing of demolition debris, concrete, and soil properly c. Installation of a stabilized construction entrance/exit and stabilization of disturbed areas 3. Good Housekeeping a. Implement proper protections for fueling and maintenance of equipment and vehicles b. Manage waste and aggressively control litter 4. Post Construction a. Stabilize soil in disturbed areas either by revegetation or chemical stabilizer b. Implement any necessary drainage mitigation c. Revegetate any disturbed areas. **MM 3.16-2a: Federal Emergency Management Agency Flood Zone Mapping and Strategic Construction Siting and Facility Placement.** Prior to the preparation of Final Flood Hazard Assessment (Mitigation Measure MM 3.16-3a) and Grading Plan (Mitigation Measure 3.16-4a), the developer will consult with the Federal Emergency Management Agency for flood zone mapping services of the estimated area of impact on Edwards Air Force Base that is currently unmapped. Once flood risks are determined by the Federal Emergency Management Agency, these official flood zone boundaries will be incorporated into the final version of all technical hydrology and flood-related documents prepared for the project so that appropriate design recommendations for the projects can be made. Based on specific flood zone information, construction staging areas and final project structures would be sited to avoid existing hydrologic features (including flood zones and drainages) to the maximum extent possible. **MM 3.16-3a: Final Flood Hazard Assessment.** Prior to construction, a Final Flood Hazard Assessment shall be prepared for the project. The Final Flood Hazard Assessment shall describe the existing flood risks onsite and how the project structures would be designed to incorporate the requirements of the Kern County Floodplain Management Ordinance. The existing flood risks on the Edwards Air Force Base portion of the site shall be determined through developer coordination with the Federal Emergency Management Agency (see Mitigation Measure MM 3.16-2a). For any solar arrays installed within flood zones, final design of the solar arrays shall include 1 foot of freeboard clearance above the calculated maximum flood depths for the solar arrays or the finished floor of any permanent structures. Where deemed necessary, solar panel sites shall be minimally graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways without increasing the water surface elevations more than 1 foot or as otherwise required by Kern County's Floodplain Management Ordinance and in accordance with the final Grading Plan as approved by Kern County Public Works - Engineering. The Final Flood Hazard Assessment shall be approved by the Floodplain Management Section of the Kern County Public Works Department prior to the issuance of a grading permit for the project. **MM 3.16-4a: Grading Plan.** Prior to commencement of construction or decommissioning activities, the developer shall prepare a Grading Plan per the Kern County Grading Code and Kern County Grading Guidelines. The Grading Plan shall include the location of all existing drainages onsite, project grading details and the drainage devices and erosion control features that would be installed onsite to minimize excess site runoff, erosion and sedimentation. Examples of features installed onsite that would minimize runoff, erosion and sedimentation include energy dissipaters, and water quality inlets. The plan shall also disclose flood protection measures implemented for structures onsite as identified in the Flood Hazard Assessment (see Mitigation Measure MM 3.16-3a). Flood zone information used in the preparation of the Grading Plan will be	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		based on flood zone maps obtained from developer consultation with FEMA (see Mitigation Measure MM 3.7-2a). The Grading Plan shall be approved by Kern County Public Works – Engineering prior to issuance of a grading permit.	
Impact 3.16-2: The project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.	Potentially significant	None required	Less than significant
Impact 3.16-3: The project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation and/or flooding onsite or off site.	Potentially significant	Mitigation Measures MM 3.16-1a through MM 3.16-4a	Less than significant
Impact 3.16-4: The project could create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Potentially significant	Mitigation Measures MM 3.16-1a, MM 3.16-4a, and: **MM 3.16-5a: Hydrologic Analysis and Drainage Plan.** Prior to the issuance of a grading permit, the project proponent shall complete a hydrologic study and drainage plan designed to evaluate and minimize potential increases in runoff from the project site. The study shall include, but is not limited to the following: 1. Numerical stormwater model for the project site, and would evaluate existing and proposed (with project) drainage conditions during storm events ranging up to the 100-year event. 2. The study shall also consider potential for erosion and sedimentation in light of modeled changes in stormwater flow across the project area that would result from project implementation. 3. The drainage plan would include engineering recommendations to be incorporated into the project and applied within the site boundary. Engineering recommendations will include measures to offset increases in stormwater runoff that would result from the project, as well as implementation of design measures to minimize or manage flow concentration and changes in flow depth or velocity so as to minimize erosion, sedimentation, and flooding onsite or onsite. 4. The final design of the solar arrays shall include 1 foot of freeboard clearance above the calculated maximum flood depths for the solar arrays or the finished floor of any permanent structures. Solar panel sites located within a 100-year floodplain shall be graded to direct potential flood waters without increasing the water surface elevations more than 1 foot or as required by Kern County's Floodplain Ordinance. 5. The hydrologic study and drainage plan shall be prepared in accordance with the Kern County Grading Code and Kern County Development Standards, and approved by the Kern County Public Works Department prior to the issuance of grading permits.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.16-5: The project could otherwise substantially degrade water quality.	Potentially significant	Mitigation Measures MM 3.16-1a through MM 3.16-4a, and MM 3.7-2a	Less than significant
Impact 3.16-6: The project could place within a 100-year flood hazard area structures that would impede or redirect flood flows.	Potentially significant	Mitigation Measures MM 3.16-2a through MM 3.16-4a	Less than significant
Cumulative	Potentially significant	Implement Mitigation Measures MM 3.9-1a, MM 3.16-1a through MM 3.16-5a, and MM 3.7-2a	Less than significant
5 Consequences of Project Implementation			
Impact 5-1: The project could result in an inefficient, wasteful, and/or unnecessary use of energy for transportation of materials and worker commutes.	Potentially Significant	**MM 5-1a: Transportation Energy Management Plan.** The developer shall develop and implement a construction- and decommissioning-phase Transportation Energy Management Plan in consultation with Kern County and Edwards AFB to reduce construction- and decommissioning-related transportation energy consumption. The plan shall include but not be limited to the following measures: 1. Require that onsite equipment and vehicle operators minimize equipment and vehicle idling time either by shutting equipment off when not in use or by limiting idling time to a maximum of 5 minutes. 2. Designate a Transportation Energy Manager (TEM) to coordinate ridesharing by construction and decommissioning employees. The TEM shall encourage carpooling by posting commuter ride sign-up sheets, maintaining and posting an employee home zip code map. 3. Provide priority parking onsite for vehicles with two or more passengers. 4. When feasible, arrange for a single construction vendor who makes deliveries for several items. 5. Plan construction delivery and waste hauling routes to eliminate unnecessary trips. 6. The plan shall be submitted to Kern County and to Edwards AFB for review and approval prior to the start of construction.	Less than significant

TABLE ES-6
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED ACTION GENERATION TIE LINES (KERN COUNTY MITIGATION AUTHORITY)

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.1 Aesthetics			
Impact 3.1-1: Substantially degrade the existing visual character or quality of the site and its surroundings.	Potentially significant	**MM 3.1-1b: Landscape Revegetation and Restoration Plan.** The following shall be implemented by the project proponent: 1. Prior to final onsite inspections, groupings of drought-tolerant plants (including relocation of Joshua trees as described in Mitigation Measures MM 3.5-14b), shall be planted along the generation tie line routes where transmission pole structures are constructed and where adjoining property is zoned for residential use. (E [Estate Residential], R-1 [Low-Density Residential], R-2 [Medium-Density Residential], R-3 [High-Density Residential], or PL (Platted Lands) zoning). Drought tolerant species shall consist of locally endemic plants that currently exist on the generation tie-line sites as described in the Biological Resources Technical Report for the Gen-Tie Routes for Edwards Air Force Base Solar EUL Project (Dudek, 2018) and shall extend approximately 25 feet on either side of the transmission pole structures. This requirement may be requested to be waived should the adjacent property be owned by the project proponent (to be verified by the Kern County Planning and Natural Resources Department) or a public or private agency submit correspondence to the Kern County Planning and Natural Resources Department requesting this requirement be waived. 2. Should the project proponent or agency sell the adjacent property prior to a final site inspection, drought-tolerant plants shall be planted prior to the sale. If such landscaping is required, it must be continuously maintained on the tie-line sites by the project proponent, in accordance with Section 19.86 (Landscaping Standards) of the Kern County Zoning Ordinance. 3. Prior to the commencement of operations, the project proponent must submit a Landscape Revegetation and Restoration Plan for the generation tie-line routes to the Kern County Planning and Natural Resources Department for approval. The plan shall include, but not limited to the following: a. Where feasible, root balls shall be maintained during vegetation clearing to maintain soil stability and ultimately vegetation regrowth following construction. b. Ground cover shall include native seed mix and shall be spread where earthmoving activities have taken place, as needed to establish revegetation. c. In areas temporarily disturbed during generation tie-line installation (including grading or removal of root balls resulting in loose soil), the ground surface shall be revegetated with native seed mix or native plants and/or allowed to revegetate with existing native seed bank in the top soil where possible to establish revegetation. Areas that contain permanent features such as perimeter roads, and maintenance roads do not require revegetation. d. The seed mix or native plants shall be determined through consultation with professionals such as landscape architect(s), horticulturist(s), botanist(s), etc. with local knowledge as shown on submitted resume and shall be approved by the Kern County Planning and Natural Resources Department prior to planting. Seed mix shall be hydro-seeded with pure live seed of habitat-appropriate, fast-germinating, weed-free native seed varieties, and shall be approved by the Kern County Planning and Natural Resources Department prior to planting. An appropriate hydraulic mulch and tackifier shall be used to protect and encapsulate the seed mixture to promote successful germination. Additional mulch or fertilizer shall not be applied. e. All disturbed soil areas should be hydro-seeded per the determination of the SWPPP recommendations. Imprinting is recommended during hydro-seeding.	Significant and unavoidable

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		f. Phased seeding may be used if a phased construction approach is used (i.e., the entire site need not be seeded all at the same time). g. The plan must include the approved native seed mix, a relative timeline for seeding the routes and a percentage of the routes to be covered, detail the consultation efforts completed and the methods that comply with wildlife agency regulations and prohibition of the use of toxic rodenticides. h. The revegetation and restoration of the generation tie-line sites, shall be monitored annually for a 3-year period, and an annual evaluation report shall be submitted to the Kern County Planning and Natural Resources Department during the 3-year period. Ground cover shall be continuously maintained on the site by the project proponent. The 3-year monitoring program is intended to ensure the site naturally achieve native plant diversity, establishes perennials, and is consistent with ground cover conditions prior to implementation of the project, where feasible. **MM 3.1-2b: Recycling and Trash Abatement.** Prior to issuance of a grading or building permit, a Maintenance, Trash Abatement, and Pest Management Program for the gen-tie construction and decommissioning activities shall be submitted to the Kern County Planning and Natural Resources Department. The program shall include, but not be limited to the following: 1. The project proponent shall clear debris from the generation tie line area daily during the construction and decommissioning activities. 2. Signs shall be clearly established with contact information for the project proponent's maintenance staff. Maintenance staff shall respond within 2 days to requests for additional cleanup of debris at gen-tie installation sites. Correspondence with such requests and responses shall be submitted to the Kern County Planning and Natural Resources Department. 3. Daily construction trash removal with recycling program during generation tie line installation. Pest/rodent barriers for all receptacles shall be detailed. **MM 3.1-3b: Generation-tie Line Lighting Standards.** The project shall continuously comply with the following: Generation tie line project lighting shall comply with the applicable provisions of the Dark Skies Ordinance (Chapter 19.81 of the Kern County Zoning Ordinance), and shall be designed to provide the minimum illumination needed to achieve safety and security objectives. All lighting shall be directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs shall not extend below the shields. A lighting plan shall be submitted and approved.	
Impact 3.1-2: Create a new source of substantial light or glare that would adversely affect day or nighttime views in this area.	Potentially significant	Implement Mitigation Measures MM 3.1-1b	Less than significant
Cumulative	Potentially significant	Implement Mitigation Measures MM 3.1-1b through MM 3.1-3b,	Significant and unavoidable

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.2 Agricultural Resources			
Impact 3.2-1: The project would conflict with existing zoning for agricultural use or a Williamson Act Contract.	Less than significant	None required	Less than significant
Impact 3.2-2: Involves other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.	Less than significant	None required	Less than significant
Cumulative	Less than significant	None required	Less than significant
3.3 Air Quality			
Impact 3.3-1: The project would conflict with or obstruct implementation of the applicable air quality plan.	Significant and unavoidable	**MM 3.3-1b: Fugitive Dust Control Measures.** The project proponent shall ensure construction of the generation tie-lines shall be conducted in compliance with applicable rules and regulations set forth by the Eastern Kern Air Pollution Control District. Dust control measures outlined below shall be implemented where they are applicable and feasible. The list shall not be considered all-inclusive and any other measures to reduce fugitive dust emissions may be required by appropriate agencies to respond to urgent issues on site: 1. Land Preparation, Excavation and/or Demolition. The following dust control measures shall be implemented: a. All soil being actively excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas. Watering shall take place a minimum of three times daily on disturbed soil areas with active operations, unless dust is otherwise controlled by rainfall or use of a dust suppressant. b. After active gen-tie construction activities, soil shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods. c. All unpaved construction and site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent. d. Clearing, grading, earth moving, and excavation activities shall cease during periods of winds greater than 20 miles per hour (averaged over 1 hour), or when dust plumes of 20% or greater opacity impact public roads, occupied structures, or neighboring property or as identified in a plan approved by the Eastern Kern Air Pollution Control District. e. All trucks entering or leaving the site will cover all loads of soils, sands, and other loose materials, or be thoroughly wetted with a minimum freeboard height of one foot. f. Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times. g. Stockpiles of soil or other fine loose material shall be stabilized by tarp covering, watering or other appropriate method to prevent wind-blown fugitive dust.	Significant and unavoidable

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		h. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds or covered with tarps. i. Prior to gen-tie construction, wind breaks (such as chain-link fencing including a wind barrier) shall be installed in areas where appropriate. j. Where acceptable to the Kern County Fire Department, weed control shall be accomplished by mowing instead of disking, thereby, leaving the ground undisturbed and with a mulch covering. k. When grading is unavoidable, it is to be phased and done with the application of a non-toxic soil stabilizer or soil weighting agent, or alternative soil stabilizing methods. l. Where feasible, plant roots shall be left in place to stabilize the soil. m. Reduce and/or phase the amount of the disturbed area (e.g., grading, excavation) where possible. 2. Generation tie-line construction. After active clearing, grading, and earth moving is completed within any portion of the tie-line routes, the following dust control practices shall be implemented: a. Dust suppressant shall be used on the same day or day immediately following the cessation of activity for a particular area where further activity is not planned. b. Dependent on specific site conditions (season and wind conditions), revegetation shall occur in those areas where planned after installation of the generation tie-lines. c. All unpaved road areas used for gen-tie construction or decommissioning shall be treated with a dust suppressant or graveled to prevent excessive dust. d. The project proponent shall use dust suppression measures during road surface preparation activities, including grading and compaction. e. Final road surfaces must be stabilized to achieve a measurable threshold friction velocity (TFV) equal to or greater than 100 centimeters per second (cm/S). f. Wind barrier fencing or screening shall be installed, when appropriate. 3. Vehicular Activities. During all phases of generation tie-line construction, the following vehicular control measures shall be implemented: a. On-site vehicle speed shall be limited to 10 miles per hour on unpaved areas within the generation tie-line areas. Vehicles may travel up to 25 miles per hour on stabilized unpaved roads (application of palliatives, gravel, etc. that reduces the erosion potential of the soil) as long as such speeds do not create visible dust emissions. b. Visible speed limit signs shall be posted at main ingress point(s) on generation tie-line sites. c. All areas with vehicle traffic such as the main entrance roadway to the generation tie-line installation sites shall be graveled or treated with dust palliatives so as to prevent track-out onto public roadways. d. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least 1 foot of freeboard. e. Streets used by the project during generation tie-line installation shall be kept clean, and project-related accumulated silt shall be removed on at a minimum of once daily, or as necessary to prevent substantial offsite fugitive dust releases. The use of either dry rotary brushes (unless prior wetting) or blower devices is prohibited.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		f. Access to the generation tie-line installation sites shall be by means of an apron into the tie-line sites from adjoining surfaced roadways. The apron shall be surfaced or treated with dust suppressants. If site soils cling to the wheels of the vehicles, then a grizzly, wheel-washer, or other such device shall be used on the road exiting the tie-line sites, immediately prior to the pavement, to remove most of the soil material from vehicle tires. g. If site soils cling to the wheels of the vehicles, then a track out control device or other such device shall be used on the road exiting the generation tie line site, immediately prior to the pavement, to remove most of the soil material from vehicle tires. **MM 3.3-2b: Grading Plan.** Prior to the issuance of grading or building permits, the project proponent shall provide a comprehensive generation tie-line Phased Grading Plan for review by the Kern County Planning and Natural Resources Department to reduce fugitive dust emissions resulting from wind erosion at the site. The Phased Grading Plan shall: 1. Identify a comprehensive grading schedule for the entire generation tie-line routes which demonstrates the following: a. **Minimal Grading**. Grading shall be minimized to limit the removal of topsoil and creation of loose soils. Only in areas where drainage improvements, structural foundations, service roads, and leveling of severe grades need to occur will grading that removes and recompacts the soil surface occur. Water and/or dust palliatives shall be immediately applied following any grading. Construction (installation of posts, roads, etc.) shall commence on areas that have undergone initial ground disturbance or grading within 20 calendar days. b. **Dust Suppression:** Application of water and/or dust palliatives shall be applied on an as-needed basis throughout generation tie-line construction to help reduce dust, especially during periods of high winds, and shall include use of (1) an eco-safe, biodegradable, liquid copolymer shall be used to stabilize and solidify any soil; and (2) A hydro mulch mixture composed of wood fiber mulch and an Environ-Mend binder may also be applied, where real-time weather conditions dictate that additional measures are necessary. c. **Water Suppression**. Water trucks shall transit across the generation tie line routes and construction access roads to suppress the fugitive dust from disturbed soils on roads and active working areas on a regular and as needed basis. 2. Minimize all grading activities to those areas necessary for project access and installation of generation tie lines. Construction shall commence on areas that have undergone initial grading within 20 calendar days. 3. Identify, in addition to those measures required by the Eastern Kern Air Pollution Control District, all measures being undertaken during generation tie-line construction activities to ensure dust being blown off site is minimized. Measure may include, but are not limited to: a. Increased use of water and or use of dust suppressant. b. Pre-seeding and/or use of wood chips as permitted by the EKAPCD c. Construction of dust screening around the generation tie-line site. 4. **Revegetation Plan.** A Revegetation Plan shall be submitted for approval to the Kern County Planning and Natural Resources Department (per MM 3.1-1b). To minimize long term dust issues from the project, the generation tie-line routes shall be revegetated (consistent with existing site conditions). Root balls shall be maintained during vegetation clearing to maintain soil stability and ultimately vegetation regrowth following	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		construction of routes. Following construction completion of generation tie-line routes, the gen-tie areas shall be reseeded with native vegetation. **MM 3.3-3b: Construction Equipment Standards.** The project proponent and/or its contractors shall implement the following measures during construction of the project: 1. All equipment shall be maintained in accordance with the manufacturer's specifications. 2. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes. 3. No individual piece of construction equipment shall operate longer than 8 consecutive hours per day. 4. Electric equipment shall be used whenever possible in lieu of diesel or gasoline-powered equipment. 5. All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOx emissions. 6. On-road and off-road diesel equipment shall use diesel particulate filters (or the equivalent) if permitted under manufacturer's guidelines. 7. Prohibit the use of heavy-equipment during first- or second-stage smog alerts and suspend all construction activities during second-stage smog alerts. 8. Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use to the extent feasible. 9. Require that trucks and vehicles in loading or unloading queues have their engines turned-off when not in use. 10. Off-road equipment engines over 50 horsepower shall be Tier 2 certified or higher (unless Tier 2 equipment has been determined to not be available). 11. Provide notification to trucks and vehicles in loading or unloading queues that their engines shall be turned-off when not in use for more than 10 minutes. **MM 3.3-4b: Onsite Idling Standards.** During generation tie-line installation these measures should be required to ensure the reduction of public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles: 1. The driver shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location. 2. The driver shall not operate a diesel-fueled auxiliary power system to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5 minutes at any location when within 100 feet of a restricted area. **MM 3.3-5b: Dust Control.** The project proponent shall continuously comply with the following measures to control fugitive dust emissions during generation tie-line installation activities: 1. Increase handling moisture content of graded soils from the typical of 15 percent to 20 percent during construction activities. 2. Reduce speed of road grading by motor graders and rollers from typical 7.1 miles per hour (mph) to 5 mph. 3. Prior to construction, onsite roads that will have the greatest extent of onsite travel shall be graveled. 4. Use a dust suppressant such as magnesium chloride, polymer, or similar, to the extent feasible, including on gravel roads.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		MM 3.3-6b: Onsite Emissions Control. The project proponent shall continuously comply with the following measures during construction of generation tie-lines to control emissions from onsite dedicated equipment (equipment that would remain onsite each day): 1. All onsite off-road equipment and on-road vehicles for maintenance shall meet the recent CARB engine emission standards or alternatively fueled construction equipment, such as compressed natural gas, liquefied gas, or electric, as appropriate. 2. All equipment shall be turned off when not in use, where feasible. Engine idling of all equipment shall be minimized. 3. All equipment engines shall be maintained in good operating condition and in tune per manufacturer's specification.	
Impact 3.3-2: The proposed projects could violate an applicable air quality standard or contribute substantially to an existing or projected air quality violation.	Significant and unavoidable	Mitigation Measures MM 3.3-1b through MM 3.3-6b	Significant and unavoidable
Impact 3.3-3: Construction and operation of the proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors).	Significant and unavoidable	Mitigation Measures MM 3.3-1b through MM 3.3-6b	Significant and unavoidable
Impact 3.3-4: Construction and operation of the proposed project could expose sensitive receptors to substantial pollutant concentrations.	Potentially significant	**MM 3.3-7b: Valley Fever.** Prior to ground disturbance activities, the project proponent shall provide a "Valley Fever Training Information Packet" and conduct training sessions for all construction personnel. A copy of the handout and a schedule of education sessions shall be provided to the Kern County Planning and Natural Resources Department. All evidence of the training session(s) and handout(s) shall be submitted to the Kern County Planning and Natural Resources Department on a monthly basis. Multiple training sessions may be conducted if different work crews come to the site for different stages of construction; however, all construction personnel shall be provided training prior to beginning work. The evidence submitted to the Kern County Planning and Natural Resources Department regarding the "Valley Fever Training Handout" and Session(s) shall include the following: 1. A sign-in sheet (to include the printed employee names, signature, and date) for all employees who attended the training session. 2. Distribution of an information packet that includes educational information regarding the health effects of exposure to criteria pollutant emissions and Valley Fever; symptoms of exposure; and instruction for	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		reporting cases of flu-like or respiratory illness symptoms to the Site Safety Officer. Those with persistent systems lasting more than 3 days shall be recommended to seek immediate medical advice. 3. Training on methods that may help prevent Valley Fever infection. 4. A demonstration to employees on how to use personal protective equipment, such as respiratory equipment (masks), to reduce exposure to pollutants and facilitate recognition of symptoms and earlier treatment of Valley Fever. Though use of the equipment is not mandatory during work, the equipment shall be readily available and shall be provided to employees for use during work, if requested by an employee. Proof that the demonstration is included in the training shall be submitted to the Kern County Planning and Natural Resources Department. This proof can be via printed training materials/agenda, DVD, digital media files, or photographs. **MM 3.3-8b: Valley Fever Public Awareness Program.** Prior to the issuance of grading permits, a one-time fee shall be paid to the Kern County Public Health Services Department, in the amount of $3,200, for Valley Fever public awareness programs.	
Cumulative	Significant and unavoidable	Mitigation Measures MM 3.3-1b through MM 3.3-6b	Significant and unavoidable
3.4 Air Space Management and Use			
Impact 3.4-1: The project is located within the adopted Kern County Airport Land Use Compatibility Plan and could result in a safety hazard for people residing or working in the project area.	Less than significant	**MM 3.4-1b: Federal Aviation Administration Notification.** Prior to issuance of grading or building permits for generation tie-line installation: 1. The developer shall submit Form 7460-1 (Notification of Proposed Construction or Alteration) to the Federal Aviation Administration, in the form and manner prescribed in Code of Federal Regulation 77.17 for the gen-tie towers; 2. The developer shall also provide documentation to the Kern County Planning and Natural Resources Department demonstrating that the Federal Aviation Administration has issued a “Determination of No Hazard to Air Navigation” For the gen-tie towers. This documentation shall include written concurrence from the military authority responsible for operations in the flight area depicted in the Kern County Zoning Ordinance Figure 19.08.160 that all project components in the flight area would create no significant military mission impacts. 3. The developer shall also provide documentation to the Kern County Planning and Natural Resources Department demonstrating that a copy of the approved form(s) has been provided to the operators of Mojave Air Space and Port. 4. The developer shall also provide documentation to the Kern County planning and Natural Resources Department demonstrating that project components would create no significant impact to aircraft operations at Mojave Air & Space Port (MHV).	Less than significant
Impact 3.4-2: The project is located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the project area.	Less than significant	No mitigation measures are required.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.4-3: The project could result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.	Less than significant	No mitigation measures are required.	Less than significant
Cumulative	Less than significant	Mitigation Measure MM 3.4-1b.	Less than significant
3.5 Biological Resources			
Impact 3.5-1: The project would have a substantial adverse impact, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.	Potentially significant	**MM 3.5-1b: Biological Monitoring.** Prior to the issuance of grading or building permits for generation tie-line construction, the project proponent shall retain a qualified biologist(s) who meets the qualifications of an authorized biologist as defined by U.S. Fish and Wildlife Service to oversee compliance with protection measures for all listed and other special-status species. 1. The project qualified biologist(s) shall be onsite during ground disturbing activities throughout the generation tie-line construction phase. Ground disturbing activities include, but are not limited to: mowing, brush clearance, grubbing, excavation, trenching, grading, cut and roll vegetation clearing, drilling, equipment laydown or parking. 2. The project qualified biologist(s) shall have the right to halt all activities that are in violation of the special-status species protection measures. Work shall proceed only after hazards to special-status species are removed and the species is no longer at risk. 3. The project qualified biologist(s) shall have in her/his possession a copy of all the biological compliance measures while work is being conducted onsite. 4. Prior to issuance of grading or building permits for the generation tie-line construction, contact information for the qualified biologist(s) shall be submitted to the appropriate Kern County Planning and Natural Resources Department. Any individuals who undertake biological monitoring and mitigation tasks shall be supervised by the qualified biologist(s) and shall have the appropriate education and experience to accomplish biological monitoring and mitigation tasks. Biological monitors shall comply with the above measures. **MM 3.5-2b: Worker Environmental Awareness Training and Education Program.** Prior to the issuance of grading or building permits and for the duration of generation tie-line construction activities, within 1 week of employment all new construction workers at laydown area and/or generation tie-line transmission routes shall attend a Worker Environmental Awareness Training and Education Program (WEATEP), developed and presented by the Lead Biologist. The Training and Education shall include: 1. Any employee responsible for the operations and maintenance or decommissioning of the project generation tie-line facilities shall also attend the Worker Environmental Awareness Training and Education Program. 2. The program shall include information on the life history of the desert tortoise; burrowing owl; golden eagle, Swainson's hawk, and other raptors; nesting birds; American badger; desert kit fox; as well as other wildlife and plant species that may be encountered during generation tie line installation activities. The program shall also discuss the legal protection status of each species, the definition of "take" under the Federal Endangered Species Act and California Endangered Species Act, measures the project proponent is implementing to protect the species, reporting requirements, specific measures that each worker shall	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		employ to avoid take of wildlife species, and penalties for violation of the Federal Endangered Species Act or California Endangered Species Act. 3. An acknowledgement form signed by each worker indicating that Worker Environmental Awareness Training and Education Program has been completed would be kept on record. 4. A sticker shall be placed on hard hats indicating that the worker has completed the Worker Environmental Awareness Training and Education Program. Construction workers shall not be permitted to operate equipment within the generation tie-line construction areas unless they have attended the Worker Environmental Awareness Training and Education Program and are wearing hard hats with the required sticker. 5. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the Worker Environmental Awareness Training and Education Program and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department. 6. A copy of the training transcript, training video or informational binder (including such information as trenching protection for kit fox requirements) for specific procedures shall be kept available for all personnel to review and be familiar with as necessary. 7. The generation tie-line construction crews and contractor(s) shall be responsible for unauthorized impacts from generation tie-line construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by project permits. (See MM 3.5-4 (2)) **MM 3.5-3b: Noise, Dust and Lighting Mitigation.** The following measure will be implemented to avoid, minimize and mitigate potential impacts to special-status wildlife from noise: 1. Construction equipment will be restricted from use in areas where biological buffers have been established to protect nests or other potentially noise sensitive resources. Buffers will be removed when nests have fledged or failed, or resource concerns no longer exist. 2. Implement dust mitigation per Mitigation Measures MM 3.3-1 through MM 3.3-8 above. 3. Night lighting will be kept to the minimum required to conduct project activities and ensure human safety and site security. **MM 3.5-4b: General Avoidance.** During construction and decommissioning of generation tie-lines, the project proponent or contractor shall implement the following general avoidance and protective measures: 1. Prior to conducting vegetation clearing or grading activities associated with construction or decommissioning of generation tie-lines, a qualified biologist or biological monitor that has been approved by the qualified biologist shall survey the area immediately prior to conducting these activities to ensure that no special-status animals are present. A qualified biologist or biological monitor shall monitor all initial generation tie-line installations and decommissioning ground-disturbance activities. A report of those activities shall be submitted to the Kern County Planning and Natural Resources Department. 2. Based on the results of generation tie-line pre-construction surveys, if any evidence of occupation of the site by listed or other special-status species is observed, a no- disturbance buffer shall be established by a qualified biologist that results in sufficient avoidance, as described below. If sufficient avoidance cannot be established, construction shall cease in the vicinity of the Animal. For state and/or federally listed species, the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife, as appropriate depending on the species, shall be contacted for further guidance and consultation on additional measures required.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		a. All proposed impact areas, including generation-tie line, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid natural resources where possible. Generation tie-line construction-related activities outside of the impact zone shall be avoided. b. Access roads that are planned for use during generation tie-line installation shall not extend beyond the planned impact area. All vehicle traffic shall be contained within the planned impact area or in previously disturbed areas. Where new access routes are required, the route will be clearly marked (i.e., flagged and/or staked) prior to generation tie-line construction. c. If exclusion fencing is required by any consulting Resource Agency (i.e., California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service), the site shall be fenced with a temporary exclusion fence to keep special-status terrestrial wildlife species, including desert tortoise, from entering during construction. This exclusion fencing shall be constructed of silt fence material, metal flashing, plastic sheeting, or other materials that will prohibit wildlife from climbing the fence or burrowing below the fence. The fencing shall be buried approximately 12 inches below the surface and extend a minimum of 18 inches above grade. Fencing shall be installed prior to issuance of grading or building permits and shall be maintained during all phases of generation tie-line installation and decommissioning. The fencing shall be inspected by an authorized biologist approved by the Resource Agencies weekly and immediately after all major rainfall events through the duration of construction and decommissioning activities. Any needed repairs to the fence shall be performed on the day of their discovery. Exclusion fencing shall be removed once generation tie-line construction or decommissioning activities are complete. Outside temporarily fenced exclusion areas, the project proponent/operator shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. These areas shall be flagged and disturbance activities, vehicles, and equipment shall be confined to these flagged areas. When consultation with the Resource Agency is required, such Resource Agency may impose additional requirements. 3. To prevent inadvertent entrapment of desert kit foxes, badgers, or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered with plywood or similar materials at the close of each working day, or provided with one or more escape ramps constructed of earth fill or wooden planks that are no less than 12 inches wide and secured at the top and spaced at 100 foot intervals. Covered and non-covered holes or trenches shall be thoroughly inspected for trapped animals by a qualified biologist or their biological monitor at the beginning and end of each day, including non-work days. Immediately before such holes or trenches are filled, they shall again be thoroughly inspected by trained staff approved by the retained qualified biologist for trapped animals. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If a listed species is trapped, the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife, as appropriate for the species, and Kern County Planning and Natural Resources Department shall be contacted immediately. 4. Burrowing owls, mammals, and nesting birds can use construction pipes, culverts, or similar structures for refuge or nesting. Therefore, all construction pipes, culverts, or similar structures with a diameter of 4 inches or more that are stored at a generation tie-line installation site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved or disturbed in any way until a qualified biologist has been consulted and the animal has either moved from the structure on its own accord or until the animal has been captured and relocated by a qualified biologist holding the appropriate handling permits from the Resource Agencies.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		5. No vehicle or equipment parked on the tie-line sites shall be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of wildlife. If present, the animal shall be left to move on its own, or relocated by a qualified biologist holding the appropriate handling permits from the Resource Agencies. No one shall be allowed to touch a listed species without authorization from the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife. 6. Vehicular traffic to and from the tie-line sites shall use existing routes of travel. Cross country vehicle and equipment use outside designated work areas shall be prohibited. 7. A speed limit of 10 miles per hour shall be enforced within the limits of the generation tie-line installation project. 8. Spoils shall be stockpiled in disturbed areas that lack native vegetation when possible. Best management practices (BMPs) shall be employed to prevent erosion in accordance with the proposed project's Stormwater Pollution Prevention Plan (SWPPP) or Erosion Control Plan. All detected erosion shall be remedied within 2 days of discovery or as described in the SWPPP or Erosion Control Plan. Spoils that have been stockpiled and inactive for greater than 10 days shall be inspected by a qualified biologist for signs of special-status wildlife before moving or disturbing the spoils. 9. No refueling within or adjacent to drainages or native desert habitats (within 150 feet) shall be permitted. Contractor equipment shall be fueled on a paved area, checked for leaks prior to operation and repaired as necessary. 10. The project proponent shall submit a Maintenance and Trash Abatement/Pest Management Program to the Kern County Planning and Natural Resources Department for review and approval. The program shall include, but not limited to the following: a. The project proponent/operator shall clear debris from the project area each day during construction and decommissioning of the generation tie-lines. b. Trash and food items shall be contained in closed containers to be locked at the end of the day and removed each day during construction and decommissioning of the generation tie-lines to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs. c. The project proponent/operator shall erect a sign with contact information for the project proponent/operator's maintenance staff at each generation tie-line site during construction and decommissioning of gen-tie poles, as required by the Kern County Planning and Natural Resources Department. d. Receptacles shall include provisions for a locking system to prevent pest/rodent access to food waste receptacles that shall be implemented. 11. Workers shall be prohibited from bringing pets and firearms to the project area and from feeding wildlife. Collection of any plant or intentional killing of wildlife species shall be prohibited. **MM 3.5-5b: Raven Management Plan.** A Raven Management Plan shall be prepared and the project will contribute to the U.S. Fish and Wildlife Service Regional Raven Management Program. The Plan will include at a minimum: 1. Identification of all common raven nests along the generation tie-line routes during installation/construction. 2. Weekly inspections during construction under all nests along the generation tie-line route for evidence of raven predation (e.g., bones, carcasses, etc.) and if evidence of listed-species predation is noted, submit a	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		report to the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the Kern County Planning and Natural Resources Department within five calendar days; and 3. Provisions for the management of trash and water that could attract common ravens during the construction and decommissioning phases of the generation tie-line installation. The project proponent/operator shall be required to participate in the regional comprehensive raven management plan, to address biological resources; the project proponent/operator shall be subject to compensation through the payment of a one-time fee not to exceed $150 and no less than $105 per disturbed acre of land during construction of gen-tie pole locations, as established by the Desert Managers Group. Payment shall be made prior to starting construction activities. Evidence of the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife determination and payment of any required fees shall be submitted to the Kern County Planning and Natural Resources Department. **MM 3.5-6b Avian Power Line Specifications:** For generation tie-line construction, the project proponent/operator shall: 1. Construct all generation tie-lines to the 2006 Avian Power Line Interaction Committee Guidelines specifications to protect birds from electrocution and collision. Appropriate notes regarding these specifications shall be included on any grading permit, building permit or final map. 2. After construction, submit written documentation to the Kern County Planning and Natural Resources Department, and the California State Lands Commission, verifying that all generation tie- lines are constructed to the 2006 Avian Power Line Interaction Committee Guidelines. The project proponent/operator shall conform to the latest practices (as outlined in the 2006 Avian Power Line Interaction Committee Guidelines document) to protect birds from electrocution and collision. Install power collection and generation tie-lines utilizing Avian Power Line Interaction Committee standards for collision reducing techniques as outlined in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee, 2006). **MM 3.5-7b: Nesting Birds and Raptors.** To mitigate for potential impacts to special-status birds and birds protected under the Migratory Bird Treaty Act and California Fish and Game Code during generation tie line route construction and decommissioning activities, the following measures shall be implemented as part of the approval for a grading or building permit. 1. During the avian nesting season (February 1 – August 31), a qualified biologist shall conduct a preconstruction avian nesting survey no more than 7 days prior to initial vegetation clearing. Surveys need not be conducted for the entire project site at one time; they may be phased so that surveys occur within 7 days prior to clearing of specific areas of the generation tie-lines. The surveying biologist must be qualified to determine the species, status, and nesting stage without causing intrusive disturbance. At no time shall the biologist be allowed to handle the nest or its eggs. The survey shall cover all reasonably potential nesting locations on and within 500 feet of the tie line site—this including ground nesting where species, such as California horned lark and killdeer might nest, all shrubs that could support nests, and suitable raptor nest sites such as nearby trees and power poles. Access shall be granted on private offsite properties prior to conducting surveys on private land. If access is not obtainable, the biologist shall survey these areas from the nearest vantage point with use of spotting scopes or binoculars. 2. If generation tie-line construction is scheduled to occur during the non-nesting season (September 1 through February 1), no preconstruction surveys or additional measures are required for non-listed avian species.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		3. If generation tie-line construction begins in the non-nesting season and proceeds continuously into the nesting season within any particular construction or decommissioning area, no surveys are required for non-listed avian species so long as all suitable nesting sites have been cleared from active construction/decommissioning areas. 4. If active nests are found, a 100-foot no-disturbance buffer shall be created around passerine species' nests unless adjusted by the qualified biologist based on the needs and sensitivities of individual species, and a 300-foot no-disturbance buffer around non-listed raptor species' nests (or a suitable distance otherwise determined in consultation with California Department of Fish and Wildlife). These buffers shall remain in effect until a qualified wildlife biologist has determined that the birds have fledged or the proposed project component(s) have been redesigned to avoid the area. All no-disturbance buffers shall be delineated in the field with visible flagging or fencing materia**l.** **MM 3.5-8b: Pre-construction Desert Tortoise Surveys**. Within 14 days prior to the commencement of any ground-disturbing activities for generation tie-line construction the project proponent shall conduct preconstruction surveys for desert tortoise within each generation tie-line construction site. The surveys shall be conducted in accordance with the U.S. Fish and Wildlife Service protocol (2010). If no burrows or tortoises are discovered during preconstruction surveys, no further mitigation is necessary. A survey shall be submitted with supporting evidence included such as photographs of areas/locations that may be suitable for this habitat, etc. If burrows or tortoises are identified during preconstruction surveys, project proponent shall be required to: 1. Potential burrows will be buffered by 30 feet unless they can be shown to be unoccupied or the authorized biologist believes a smaller buffer is appropriate in order to protect underground burrows. Examples of situations where smaller buffers may be appropriate may include: burrows obviously head in different direction from the impact; taking into consideration the type of activity near the burrow (i.e., will it have potential to crush a burrow); is the burrow adjacent to an existing thoroughfare that receives vehicle use already and is the proposed activity similar in nature etc. 2. All activities shall cease within 200 feet of tortoises and the tortoises shall be allowed to move off the site on their own. If desert tortoises occur in a work area and they will not leave of their own accord, then it will be necessary to coordinate with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. Physical relocation of a desert tortoise may not occur unless approved by the wildlife agencies and this may require authorizations pursuant to Incidental Take Permits from the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. 3. Should the applicant obtain a permit for the incidental take of desert tortoise, the applicant shall develop a plan for desert tortoise translocation and monitoring prior to project construction. The plan shall provide the framework for implementing the following measures: a. Clearance surveys shall occur on a daily basis where construction activities occur within or adjacent to suitable desert tortoise habitat. b. Any desert tortoises found during clearance surveys or pre-construction surveys, if avoiding the tortoise(s) is not feasible, shall be placed in suitable, undisturbed habitat within 500 meters (1,640 feet) of their original location. The qualified desert tortoise biologist shall determine the best location for release, based on the condition of the vegetation, soil, other habitat features, and the proximity to human activities. If desert tortoises are found in a construction area where fencing was deemed unnecessary, work will cease until the qualified desert tortoise biologist moves the tortoise(s) within 500 meters (1,640 feet) of their original location.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		c. Relocation of any tortoises shall follow the Guidelines for Handling Desert Tortoises during Construction Projects (Desert Tortoise Council 1994, revised 1999). d. An Authorized Biologist shall remain on site until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a monthly basis throughout construction in order to ensure project compliance with mitigation measures. e. An Authorized Biologist shall remain on-call throughout fencing and grading activities in the event a desert tortoise wanders onto the gen-tie-line site. f. If an incidental take permit is being obtained, compensatory mitigation for the loss of desert tortoise habitat shall be provided through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area, private purchase of mitigation lands, or onsite preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a 1:1 ratio to reduce potential effects to less-than-significant levels. g. Develop a plan for desert tortoise translocation and monitoring prior to project construction. The plan shall provide the framework for implementing the following measures: h. If a permanent tortoise proof wild-friendly fence is practicable, a fence shall be installed around all gen-tie line construction areas prior to the initiation of earth disturbing activities, in coordination with the Lead Biologist or on-site qualified biological monitor. The fence shall be constructed of 0.5-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during gen-tie line construction, and maintained when necessary by the project proponent to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Common raven perching deterrents shall be installed as part of the fence construction. i. After fence installation, an Authorized Biologist shall conduct a preconstruction survey for desert tortoise within the construction site. An Authorized Biologist has the appropriate education and experience to accomplish biological monitoring and mitigation tasks and is approved by the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. Two surveys without finding any desert tortoises or new desert tortoise sign shall occur prior to declaring the site clear of desert tortoises. j. All burrows that could provide shelter for a desert tortoise shall be hand-excavated prior to ground-disturbing activities. k. An Authorized Biologist shall remain on site until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a monthly basis throughout construction in order to ensure project compliance with mitigation measures. l. An Authorized Biologist shall remain on-call throughout fencing and grading activities in the event a desert tortoise wanders onto the tie-line site. m. If an ITP is being obtained, compensatory mitigation for the loss of desert tortoise habitat shall be provided through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area, private purchase of mitigation lands, or on-site preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a 1:1 ratio to reduce potential effects to less-than-significant levels.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		4. The Raven Management Plan developed for the construction of the generation tie-line sites, (as noted in section MM 3.5-5) shall include: a. Identification of all common raven nests within the site during construction. b. Weekly inspections during construction under all nests in the tie-line sites for evidence of desert tortoise predation (e.g., scute`s, shells, etc.). If evidence of desert tortoise predation is noted, a report shall be submitted to the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the Kern County Planning and Natural Resources Department within five calendar days. **MM 3.5-9b: Preconstruction Burrowing Owl Surveys.** A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience, as demonstrated in the submitted resume for approval with the Kern County Planning and Natural Resources Department) shall conduct preconstruction surveys of the permanent and temporary impact areas to locate active breeding or wintering burrowing owl burrows within 14 days prior to ground-disturbing for generation tie-line construction activities (i.e., vegetation clearance, grading, tilling). The survey methodology shall be consistent with the methods outlined in the 2012 California Department of Fish and Game Staff Report on Burrowing Owl Mitigation and including the following: 1. Surveys shall be conducted by walking parallel transects 7 to 20 meters apart, adjusting for vegetation height and density as needed, and noting any potential burrows with fresh burrowing owl sign or presence of burrowing owls. Surveys may be conducted concurrently with desert tortoise preconstruction surveys. Photographic submissions to the Kern County Planning and Natural Resources Department as part of survey results are encouraged regardless of surveys results. 2. As each burrow is investigated, surveying biologists shall also look for signs of American badger and desert kit fox. Copies of the survey results (including photographs) shall be submitted to California Department of Fish and Wildlife and the Kern County Planning and Natural Resources Department as part of the monthly biological monitoring reporting requirements. 3. If burrowing owls are detected onsite, no ground-disturbing activities shall be permitted within a buffer of no fewer than 100 meters (330 feet) from an active burrow during the breeding season (i.e., February 1 to August 31), unless otherwise authorized by California Department of Fish and Wildlife. During the non-breeding (winter) season (i.e., September 1 to January 31), ground-disturbing work can proceed as long as the work occurs no closer than 50 meters (165 feet) from the burrow. Depending on the level of disturbance, a smaller buffer may be established in consultation with California Department of Fish and Wildlife. 4. If burrow avoidance is infeasible during the non-breeding season or during the breeding season where resident owls have not yet begun egg laying or incubation, or where the juveniles are foraging independently and capable of independent survival, a qualified biologist shall implement a passive relocation program in accordance with Appendix E (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the 2012 California Department of Fish and Game Staff Report on Burrowing Owl Mitigation. 5. If passive relocation is required, the qualified biologist shall prepare a Burrowing Owl Exclusion and Mitigation Plan and Mitigation Land Management Plan in accordance with 2012 California Department of Fish and Game Staff Report on Burrowing Owl Mitigation for review and approval by California Department of Fish and Wildlife prior to passive relocation activities. The Mitigation Land Management Plan shall include a requirement for the permanent conservation of offsite Burrowing Owl Passive Relocation Compensatory Mitigation. Additional consultation between CDFW and the project owner may be required with CDFW. All final approvals, (including potential conservation easements) and consultation materials shall be submitted to the Kern County Planning and Natural Resources Department.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		MM 3.5-10b: Special-Status Mammals Management Plan. A Special-Status Mammals Management Plan will be written to avoid and minimize impacts to the Mohave ground squirrel, desert kit fox, and American badger if these resources are determined to be present on the proposed generation construction tie-line sites. If no Mohave ground squirrels are found during focused surveys, this plan will not be required and the following measures will be used to minimize impacts to American badger: 1. All dens and burrows large enough to be used by desert kit fox or American badger and in areas of potential direct impacts from generation tie-line construction (from crushing of the burrows and dens) will be carefully excavated to passively relocate these species from the immediate area. These dens will be observed by remote camera for a minimum of 3 days prior to excavation. If any sign of breeding, kit fox, or American badger is present during this time, three additional days of observation will be conducted to determine whether the burrow supports and active nest or natal den. No burrows supporting a nest or natal dens will be excavated until ongoing cameras monitoring shows no behaviors related to nesting or a natal den are observed, or until outside the period of nesting and natal den activity (approximately December through February). 2. Speed limits on generation tie-line components will be a maximum of 20 miles per hour during the day and 10 miles per hour during the night to avoid vehicle collisions. 3. If any desert kit fox or American badgers are found dead, ill, or injured on the project components, California Department of Fish and Wildlife will be notified with 24 hours to determine an appropriate course of action. Mortalities will be immediately stored in a project freezer until California Department of Fish and Wildlife determines any potential needs for necropsy.	
		MM 3.5-11b: Trench Monitoring Requirements. During construction and decommissioning of the generation tie-line routes, all trenches or holes more than 6 inches deep shall be provided with one or more escape ramps constructed of earthen fill or wooden planks (with a minimum 1 foot in width) for the protection of wildlife species and must be inspected by the Lead Biologist, qualified biological monitor, designated compliance manager, project operator, or contractor prior to being filled. 1. Any such features that are left open overnight will be searched each day and prior to construction activities to ensure no animals are trapped. Work will not continue until trapped animals have moved out of open trenches. 2. All open holes, sumps, and trenches within the Project footprint shall be inspected at the beginning, middle, and end of each day for wildlife. 3. All trenches, holes, sumps, and other excavations with sidewalls steeper than a 1:1 (45 degree) slope and that are between 2 and 8 feet deep shall be covered, when workers or equipment are not actively working in the excavation, which includes cessation of work overnight, or shall have an escape ramp of earth or a non-slip material (with a minimum 1 foot in width) with a less than 1:1 (45 degree) slope. All trenches, holes, and other excavations with sidewalls steeper than a 1:1 (45 degree) slope and greater than 8 feet deep shall be covered or have an escape ramp of earth or a non-slip material (with a minimum 1-foot in width) with a less than 1:1 (45 degree) slope, when workers or equipment are not actively working in the excavation and at the end of each work day. Where an escape ramp is required, it shall be placed every 300 feet. To prevent inadvertent entrapment of wildlife, when covers are required according to the conditions outlined above, a qualified biological monitor or designated compliance manager shall oversee the covering of all excavated, trenches, holes, sumps, or other excavations with a greater than 1:1 (45 degree) slope of any depth with barrier material (such as hardware cloth) at the close of each working day such that wildlife are unable to dig or squeeze under the barrier and become entrapped, or excavations shall have an escape ramp of earth or a non-slip material (with a minimum 1 foot in width) with a less than 1:1 (45 degree) slope.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		4. The outer 2 feet of excavation cover, shall conform to solid ground so that gaps do not occur between the cover and the ground and secured with soil staples or similar means to prevent gaps. Each morning, mid-day, the end of each day (including weekends and any other non-work days), and immediately before trenches, holes, sumps, or other excavations are back-filled, a qualified biological monitor or designated compliance manager shall thoroughly inspect for wildlife. If wildlife is observed, all activities in the vicinity shall cease and the onsite qualified biological monitor or Lead Biologist shall be consulted. 5. Trenches, holes, sumps, or other excavations that are covered long term shall be inspected at the beginning of each working day to ensure inadvertent entrapment has not occurred. 6. If any worker discovers that wildlife has become trapped, all activities in the vicinity shall cease and Lead biologist or the onsite qualified biological monitor shall be notified immediately. Project workers guided by the Lead Biologist or qualified biological monitor shall allow the trapped wildlife to escape unimpeded before activities are allowed to continue. If the entrapped animal is a federal- or state-listed species and an ITP has been acquired by the project proponent for that species, only a Designated Biologist and/or Authorized Biologist as defined in the terms of the ITP(s) may capture and relocated the animal in accordance with the project ITP provisions. If the entrapped animal is a Federal- or State-listed species and an ITP has not been acquired by the project proponent for that species, the project proponent should contact the appropriate wildlife agency immediately. 7. A log shall be kept and provided to the Kern County Planning and Natural Resources Department monthly during construction and decommissioning indicating compliance.	
		MM 3.5-12b Vegetation Salvage Mitigation and Monitoring Plan (VSMMP). If required by CDFW or LRWQCB, a Vegetation Salvage Mitigation and Monitoring Plan (VSMMP) shall be prepared that outlines the compensatory mitigation in coordination with the LRWQCB and CDFW. 1. If on-site mitigation is proposed, the VSMMP shall identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration of alluvial desert scrub. Determination of mitigation adequacy shall be based on comparison of the restored vegetation habitat with similar, undisturbed habitat in the site vicinity (such as upstream or downstream of the site). 2. The VSMMP shall include remedial measures in the event that performance criteria are not met. 3. If mitigation is implemented offsite, mitigation lands shall be comprised of similar or higher quality alluvial desert scrub and preferably located in the vicinity of the site or watershed. Off-site land shall be preserved through a deed restriction or conservation easement and the VSMMP shall identify an approach for funding assurance for the long-term management of the conserved land. 4. Copies of any coordination, permits, etc., with LRWQCB and CDFW shall be provided to the Kern County Planning and Natural Resources Department.	
Impact 3.5-2: The project would have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish	Potentially significant	**Mitigation Measures MM 3.5-1b, MM 3.5-2b, and** **MM 3.5-14b: Joshua Tree Impact Plan.** Prior to issuance of grading or building permits for the generation tie-line installation the applicant shall develop a Joshua Tree Impact Plan. The Plan shall be prepared by a qualified biologist preapproved by the Kern County Planning and Natural Resources Department and who is familiar with Western Mojave Desert species and ecosystems. At a minimum, the plan shall include the following: 1. Demonstration of full avoidance of Joshua trees as part of construction Indication of the number of trees and total area of Joshua tree woodland that would be impacted including a discussion of Joshua tree population	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
and Wildlife or the U.S. Fish and Wildlife Service.		age and health and the number of Joshua trees that could be relocated within the buffer area of the generation tie-lines (and suitable areas elsewhere). 2. Methods shall be specified for avoiding specific Joshua tree(s) and suitable candidates for translocation identified. 3. Avoidance measures during generation tie-line construction activities, such as delineating work areas and specific Joshua trees that shall be avoided. If necessary, Joshua trees should be flagged for protection or translocated to the onsite buffer area within sparsely vegetated and/or disturbed areas that are suitable for planting native desert species. 4. Monitoring requirements for any translocated Joshua trees that will be relocated. Post-monitoring of all translocated Joshua trees, if any, shall be required a minimum of 3 years following relocation to verify that the trees have adapted and are in good health. The Plan shall identify contingency measures if a tree or group of trees die, such as replanting and continued monitoring, or an in lieu fee payment. 5. Detail relocation methods. The root ball shall be preserved during relocation of Joshua trees. Preferably, a tree spade should be used to relocate Joshua trees in order to preserve the entirety of the tree's root ball. Success of relocated trees shall be a minimum of 90 percent after 3 years. The Plan shall identify the appropriate time of year for transplanting Joshua trees, and shall consider the plant's original and transplanted physical orientation, prevailing wind direction, soil type of the original and transplanted locations, and other related attributes which may affect the successful transplantation of the Joshua tree(s). In-lieu fee monetary funding may be applied for any tree not meeting the 90 percent success rate. 6. Detail of a 3-year maintenance program for any planned relocated Joshua trees on the site, such as weed maintenance, supplemental irrigation, and support stakes. 7. The plan shall specify that a qualified biologist or biological monitor shall monitor construction and all Joshua trees removed or damaged. A monitoring report shall be submitted to the Kern County Planning and Natural Resources Department to document the condition of the Joshua trees annually for 3 years if any Joshua trees are relocated. 8. Identification of the total area of Joshua tree woodland and an estimate of the number of individual Joshua trees that will be removed and/or relocated for determining of the total funds needed to comply.	
		MM 3.5-15b: In-lieu of Fee for Loss of Joshua Tree Woodland. The project proponent(s) may mitigate all or part of the project's impacts to Joshua tree woodlands by funding the acquisition and management in perpetuity of Joshua tree woodland, or habitats similar to those that contain impacted Joshua trees onsite that are located within the same bioregion and/or watershed, as approved by the Kern County Planning and Natural Resources Department. Funding and management shall be provided through a Kern County approved Conservation Plan, either through an existing mitigation bank (e.g., as managed by the City of Lancaster Parks, Recreation and Arts Department) or through a third-party entity such as the Wildlife Conservation Board or a regional Land Trust. The in-lieu fee shall provide sufficient funds to acquire appropriate lands to provide habitats containing Joshua trees at a 1:1 ratio for impacted lands, comparable to the habitat to be impacted by the project based on similar abundance and size of Joshua trees, similar co-dominant vegetation, suitable soils and hydrology, and similar levels of disturbance or habitat degradation (or lack thereof). The County-approved biologist shall submit confirmation of the total area of Joshua tree woodland and an estimate of the number of individual Joshua trees that will be removed.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.5-3: The project would have a substantial adverse impact on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	Potentially significant	Mitigation Measures MM 3.5-1b, MM 3.5-2b, and **MM 3.5-13b: Jurisdictional Waters Permitting.** Prior to construction, a formal jurisdictional delineation would be prepared for the project that describes these resources and the extent of jurisdiction under the CDFW and RWQCB. A review of streambeds along the proposed gen-tie routes has been prepared (Dudek 2018). If it is determined during final siting that ephemeral drainages cannot be avoided, the project applicant shall be subject to provision (a) as identified below: 1. If avoidance is not practical, prior to ground disturbance activities that could impact these aquatic features, the project applicant shall file a complete Report of Waste Discharge with the Lahontan RWQCB to obtain Waste Discharge Requirements and shall also consult with California Department of Fish and Wildlife on the need for a streambed alteration agreement. Correspondence and copies of reports shall be submitted to the Kern County Planning and Natural Resources Department. 2. Based on consultation with the Lahontan RWQCB and CDFW, if permits are required for the project, appropriate permits shall be obtained prior to disturbance of jurisdictional resources. 3. Compensatory mitigation for impacts to unvegetated streambeds/washes shall be identified and secured prior to disturbance of the features at a minimum 1:1 ratio, as approved by the RWQCB or CDFW either through onsite or offsite mitigation, or purchasing credits from an approved mitigation bank. 4. The project proponent shall comply with the compensatory mitigation required and proof of compliance, along with copies of permits obtained from RWQCB and/or CDFW, shall be provided to the Kern County Planning and Natural Resources Department.	Less than significant
Impact 3.5-4: The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	Less than significant	No mitigation measures are required.	Less than significant
Impact 3.5-5: The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	Potentially significant	Mitigation Measures MM 3.5-14b and MM 3.5-15b	Less than significant
Impact 3.5-6: The project would conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	Less than significant	None required	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Cumulative	Potentially significant	Mitigation Measures MM 3.5-1b through 3.5-15b	Less than significant
3.6 Cultural and Paleontological Resources			
Impact 3.6-1: The project would cause a substantial adverse change in the significance of a historical or unique archaeological resource.	Potentially significant	**MM 3.6-1b: Cultural Resources Personnel Professional Qualifications Standard.** The services of a qualified lead archaeologist meeting the secretary of the Interior's Standards for professional archaeology (U.S. Department of the Interior, 2011) shall be retained by the project proponent to carry out all mitigation measures related to archaeological, cultural and historical resources. A qualified archeological and Native American monitor may also be retained in order to work with and consult with the lead archaeologist. 1. All ground-disturbing activities within 50-feet of resources (site SS-S-23; SS-S-10; and SS-S-30) per Cultural Resources Assessment of the Gen-Tie Routes by Dudek (Appendix B7) shall be avoided. If these resources cannot be avoided, all ground-disturbing activities within the generation tie-line area shall be monitored by a Native American monitor representing at last one of the Consulting Tribes (Appendix A4), along with the lead or archeological monitor. An Archaeological Monitoring Plan shall be prepared prior to any ground disturbing activity. Ground disturbing activities include, but are not limited to: mowing, brush clearance, grubbing, excavation, trenching, grading, cut and roll vegetation clearing, drilling, equipment laydown or parking. 2. Should any discovery be found during ground work or ground disturbing activities, the qualified Native American monitor and/or qualified archaeological monitor would halt all work within 60-feet of the find and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. The lead archaeologist shall notify the applicant the Tribes and County of the discovery. All parties shall confer regarding the treatment of the discovered resource(s) and the lead archaeologist shall then prepare an Archaeological Treatment Plan for the discoveries. If consensus cannot be reached between all parties, the County shall make the final decision. 3. The archaeological monitor and qualified Native American monitor shall work under the supervision of the qualified archaeologist. The lead archaeologist, archaeological monitor, and qualified Native American monitor shall be provided all project documentation related to cultural resources within the project area prior to commencement of ground disturbance activities. Project documentation shall include but not be limited to previous cultural studies, surveys, maps, drawings, etc. Any modifications or updates to project documentation, including construction plans and schedules, shall immediately be provided to the qualified archa4.The lead archaeologist, archaeological monitor, and Native American monitor shall keep daily logs and the qualified archaeologist shall submit monthly written updates to the Kern County Planning and Natural Resources Department. After monitoring has been completed, the qualified archaeologist shall prepare a monitoring report detailing the results of monitoring. All discoveries are subject to proper recordation on California Department of Parks and Recreation (DPR) forms. All final documentation shall be submitted to the Kern County Planning and Natural Resources Department, to the consulting Tribes (Appendix A4) and to the Southern San Joaquin Valley Information Center at California State University, Bakersfield. **MM 3.6-2b: Worker Cultural Awareness Training Program.** Prior to the commencement of ground-disturbing activities, and for the duration of generation tie-line installation and decommissioning activities, a Worker Cultural Awareness Training Program shall be provided to all construction personnel prior to their commencing work at the generation tie-line sites.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		1. The training shall be prepared and conducted by a qualified archaeologist in consultation with the qualified Native American Monitor. The training may be discontinued when ground disturbance is completed or suspended, but must resume when ground-disturbing activities resume. 2. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural/ paleontological training. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker. 3. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department. The purpose of the Cultural Awareness Training Program shall be to inform and train construction personnel of the types of cultural resources that may be encountered during construction of the gen-tie lines, and to bring awareness to personnel of actions to be taken in the event of a cultural resources discovery. This may include: a discussion of applicable cultural resources statutes, regulations and related enforcement provisions; an overview of the prehistoric and historic environmental setting and context, as well as current cultural information regarding local tribal groups; samples or visuals of artifacts that might be found in the project area; a discussion of what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction; and procedures to be followed in the event of an inadvertent discovery (see Mitigation Measure MM 3.6-4b). **MM 3.6-3b: Archaeological and Native American Resources Monitoring.** Archaeological and Native American monitoring are both subject to consultation with the Native American Tribal Resource Agencies under Section106. As such, the requirements of various stakeholders must be considered and accommodation made wherever feasible. Therefore, specific archaeological and Native American monitoring details cannot be included herein. However, at a minimum it is expected that the developer shall retain a qualified archaeological monitor for project-related ground disturbing activities for the purpose of identifying and avoiding adverse effects to significant archaeological resources. Ground disturbing activities include, but are not limited to, brush clearance, grubbing, excavation, trenching, grading, and drilling. Areas requiring monitoring for the generation tie-line installation and the level of monitoring shall be developed by the Tribal Stakeholders and Kern County Planning and Natural Resources Department, in coordination with the qualified archaeologist, and shall be detailed in the Cultural Resources Management Plan for the gen-tie line route. Any archaeological monitors shall be, or work under the direct supervision of, a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's standards for professional archaeology and shall be approved by Kern County Planning and Natural Resources Department. The monitors shall be familiar with the types of historical and prehistoric resources that could be encountered within the project area. The archaeological monitor shall ensure that personnel performing ground-disturbing activities are displaying the appropriate decal on their hardhat demonstrating their CR Awareness training under Mitigation Measure MM 3.6-3b. The archaeological monitors shall record soil samples and artifact/ecofact material as warranted for analysis. The archaeological monitors shall be present on the generation tie-line site according to a schedule as detailed in the Cultural Resources Management Plan for the gen-tie line route. The monitors shall maintain a daily log of activities, which will be appended to a final monitoring report that shall be submitted to the Kern County Planning and Natural Resources Department, and Southern San Joaquin Valley Archaeological Information Center.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		Specific monitoring reporting procedures shall be detailed in the Cultural Resources Management Plan for the gen-tie line routes. Section 106 consultation with Native American tribes may result in a need for one or more Native American monitors. The specific nature of the monitoring activity performed by Native American tribes can vary and therefore the requirements for Native American monitors will be elicited as part of consultation. **MM 3.6-4b: Inadvertent Discoveries.** During generation tie-line construction and decommissioning, should subsurface cultural or paleontological resources be discovered, all activity within 60 feet of the find shall stop and a qualified paleontologist shall be contacted to assess the significance of the find. The area of the discovery shall be marked off as an Environmentally Sensitive Area (ESA) and a physical demarcation/barrier constructed. All entrance to the area shall be avoided until the discovery is assessed by the qualified archaeologist and/or Native American representative, if the discovery involves resources of interest to Native American tribes, including but not limited to prehistoric archaeological sites or tribal cultural resources. If the qualified archaeologist, in consultation with the Native American representative(s) determines the resource is significant (i.e., qualifies as a historic property, historical resource, or unique archaeological resource), then the archaeologist shall determine appropriate avoidance measures or other appropriate mitigation. Per CEQA Guidelines Section 15126.4(b)(3), project redesign and preservation in place shall be the preferred means to avoid impacts to significant historical resources. Consistent with CEQA Guidelines Section 15126.4(b)(3)(c), if it is demonstrated that resources cannot be feasibly avoided, the qualified archaeologist, in consultation with a Designated Native American monitor, shall develop additional treatment measures which may include data recovery or other appropriate measures or shall implement the provisions for mitigative treatments detailed in the Paleontological Resources Management Plan for the gen-tie line route (as required by MM 3.6-5b). Work shall not resume within 60 feet of the discovery until permission is received from the Paleontologist and/or Native American representative(s), and if in disagreement, the Kern County Planning and Natural Resources Department shall be consulted.	
Impact 3.6-2: The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Potentially significant	**MM 3.6-5b: Paleontological Resources Mitigation and Monitoring Plan.** The developer shall retain a qualified paleontologist to prepare a Paleontological Resources Mitigation and Monitoring Plan for implementation during construction of the generation tie lines. The minimum requirement for professional paleontological work is a 4-year undergraduate program and Master of Science degree, although a doctoral degree may be required for certain specialties; a qualified paleontologist is one that has experience in research, field, and laboratory methods for paleontological resources, including experience in fossil salvage, stratigraphy, fossil preparation, and identification, with experience in California. The Paleontological Resources Mitigation and Monitoring Plan shall be submitted to the Kern County Planning and Natural Resources Department for review and approval prior to the start of grading or construction and shall include the following: 1. Procedures for the discovery, recovery, and salvage of paleontological resources encountered during construction, if any, in accordance with standards for recovery established by the Society of Vertebrate Paleontology. 2. Verification that the developer has an agreement with a recognized museum repository (such as the Natural History Museum of Los Angeles County), for the disposition of recovered fossils and that the fossils shall be prepared prior to submittal to the repository as required by the repository (e.g., prepared, analyzed at a laboratory, curated, or cataloged). 3. Description of monitoring reports that will be prepared, which shall include daily logs and a final monitoring report with an itemized list of specimens found to be submitted to the Kern County Planning and Natural Resources Department and the Southern San Joaquin Valley Information Center at California State University, Bakersfield within 90 days of the completion of monitoring. Consultation of any find in the right-	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		of-way shall be conducted the Southern San Joaquin Valley Information Center at California State University, Bakersfield. 4. The project applicant shall provide for the permanent curation of recovered materials from lands under the County of Kern jurisdiction at a federally approved curation facility, such as the Tejon Tribal Curation Facility. **MM 3.6-6b: Worker Paleontological Resources Awareness Training Program.** Prior to the commencement of ground-disturbing activities, and for the duration of construction activities, a Worker Paleontological Awareness Training Program shall be provided to all construction personnel prior to their commencing work on installation of generation tie-line sites. 1. The training may be performed in concert with the archaeological/cultural resources training prior to the onset of the generation tie-line installation. The training shall be prepared and conducted by a qualified paleontologist. The training may be in the form of a video. 2. The training may be discontinued when ground disturbance is completed or suspended, but must resume when ground-disturbing activities resume. 3. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural/paleontological training. 4. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker. 5. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department. 6. The purpose of the Paleontological Awareness Training Program shall be to inform and train construction personnel of the types of paleontological resources that may be encountered during construction, and to bring awareness to personnel of actions to be taken in the event of a paleontological resources discovery. This may include: a discussion of applicable paleontological resources statues, regulations and related enforcement provisions; samples or visuals of fossils that might be found in the project area; implementation of the Paleontological Resources Mitigation and Monitoring Plan; and procedures to be followed in the event of an inadvertent discovery. 7. Consultation on any find in the right-of-way shall be conducted with the Natural History Museum of Los Angeles County. **MM 3.6-7b: Paleontological Resources Monitoring.** The developer shall provide for a qualified paleontologist or an individual working under direct supervision of a qualified paleontologist to monitor construction activities in areas where deeper excavations may be needed (greater than 10 feet). The duration and timing of the monitoring, which shall be set in the Paleontological Resources Mitigation and Monitoring Plan, shall be determined by the qualified paleontologist, in consultation with the Tribal Stakeholders and Kern County Planning and Natural Resources Department and based on the grading plans. Initially, all excavation or grading activities deeper than 10 feet shall be monitored. However, during the course of monitoring, if the paleontologist can demonstrate that the level of monitoring should be reduced, the paleontologist, in consultation with the Tribal Stakeholders and Kern County Planning and Natural Resources Department, may adjust the level of monitoring to circumstances warranted. If a resource is encountered, the monitor will implement the procedures of the Paleontological Resources Mitigation and Monitoring Plan. If recovery of a large or unusually productive fossil occurrence is necessary, the following actions shall be taken:	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		1. The paleontological monitor shall immediately notify the project developer, who shall contact the Tribal Stakeholders and Kern County Planning and Natural Resources Department. 2. Construction activities in the immediate vicinity of the site shall stop until authorization for work to continue is provided by the Tribal Stakeholders and Kern County Planning and Natural Resources Department. 3. Treatment and subsequent donation of fossils to a repository, along with the preparation of a report documenting the absence or discovery of fossil-related resources will be performed in accordance with the Paleontological Resources Mitigation and Monitoring Plan.	
Impact 3.6-3: The project would disturb human remains, including those interred outside of formal cemeteries.	Potentially significant	**MM 3.6-8b: Discovery of Human Remains.** In the event of inadvertent discovery of human remains during construction and decommissioning of generation tie-lines, all work shall be halted and the Kern County Coroner shall be contacted to evaluate the remains and follow the procedures and protocols set forth in Section 15064.4 (e)(1) of the California Environmental Quality Act Guidelines. At that time, the project proponent shall contact the Kern County Planning and Natural Resources Department regarding the find. If the County Coroner determines the remains are Native American in origin, the Coroner shall contact the Native American Heritage Commission in accordance with Health and Safety Code Section 7050.5 subdivision c, and Public Resources Code Section 5097.98 (as amended by Assembly Bill 2641). The Native American Heritage Commission shall designate a Most Likely Descendent (MLD) for the remains per Public Resources Code 5097.98. Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et. seq.) directing identification of the next-of-kin will apply.	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.6-1b through MM 3.6-8b	Less than significant
3.7 Geology, Minerals, and Soils			
Impact 3.7-1: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.	Less than significant	**MM 3.7-1b: Conduct Geotechnical Study.** Prior to the issuance of building or grading permits for the generation tie-line installation, the project proponent shall conduct a full geotechnical study to evaluate soil conditions and geologic hazards on the sites and submit it to the Kern County Public Works Department and Department for review and approval. 1. The geotechnical study must be signed by a California-registered and licensed professional engineer and must include, but not limited to, the following: a. Location of fault traces and potential for surface rupture and groundshaking potential; b. Maximum considered earthquake and associated ground acceleration; c. Potential for seismically induced liquefaction, landslides, differential settlement, and mudflows; d. Stability of any existing or proposed cut-and-fill slopes; e. Collapsible or expansive soils; f. Foundation material type; g. Potential for wind erosion, water erosion, sedimentation, and flooding;	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		h. Location and description of unprotected drainage that could be impacted by the proposed development; and, i. Recommendations for placement and design of facilities, foundations, and remediation of unstable ground. 2. The project proponent shall determine the final siting of project facilities based on the results of the geotechnical study and implement recommended measures to minimize geologic hazards. The project proponent shall not locate project facilities on or immediately adjacent to a fault trace. All structures shall be offset at least 100 feet from any mapped fault trace. Alternatively, a detailed fault trenching investigation may be performed to accurately locate the fault trace(s) to avoid sighting improvements on or close to these fault structures and to evaluate the risk of fault rupture. After locating the fault, accurate setback distances can be proposed. 3. The Kern County Public Works Department shall evaluate any final generation tie line siting design developed prior to the issuance of any building or grading permits to verify that geological constraints have been avoided.	
		MM 3.7-2b: Comply Seismic Safety Requirements. Prior to the issuance of grading permits, the project proponent shall retain a California registered and licensed engineer to design the project generation tie lines to withstand probable seismically induced ground shaking at the site. All grading and construction onsite shall adhere to the specifications, procedures, and site conditions contained in the final design plans, which shall be fully compliant with the seismic recommendations of the California-registered professional engineer. The procedures and site conditions shall encompass site preparation, foundation specifications, and protection measures for buried metal. The final structural design shall be subject to approval and follow-up inspection by the Kern County Building Inspection Department. Final design requirements shall be provided to the onsite construction supervisor and the Kern County Building Inspector to ensure compliance. A copy of the approved design shall be submitted to the Kern County Planning and Natural Resources Department.	
Impact 3.7-2: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.	Less than significant	Mitigation Measure MM 3.7-2b	Less than significant
Impact 3.7-3: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic related ground failure, including liquefaction.	Less than significant	Mitigation Measure MM 3.7-1b	Less than significant
Impact 3.7-4: The project would result in substantial soil erosion or the loss of topsoil.	Less than significant	None required	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.7-5: The project is located on a geologic unit or soil that is unstable, or that would become unstable as result of the project, and potentially result in onsite or onsite landslide, lateral spreading, subsidence, liquefaction, or collapse.	Less than significant	None required	Less than significant
Impact 3.7-6: The project is located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.	Less than significant	Mitigation Measures MM 3.7-1b, MM 3.7-2b, and **MM 3.7-3b: Generation-Tie Line Grading.** The project proponent shall limit grading to the minimum area necessary for construction of the generation tie lines. Prior to the initiation of construction, the project proponent shall retain a California registered and licensed professional engineer to submit final grading earthwork plans prior to generation tie line construction to the Kern County Public Works for approval. **MM 3.7-4b: Soil Erosion and Sedimentation Control Plan.** The project proponent shall prepare a Soil Erosion and Sedimentation Control Plan to mitigate potential loss of soil and erosion. The plan shall be prepared by a California registered and licensed civil engineer or other authorized professional and submitted for review and approval by the Kern County Engineering, Surveying and Permit Services Department.	Less than significant
Impact 3.7-7: The project has soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater.	Less than significant	None required	Less than significant
Impact 3.7-8: The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	Less than significant	None required	Less than significant
Impact 3.7-9: The project would result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.	Less than significant	None required	Less than significant
Cumulative	Less than significant	None required	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.8 Greenhouse Gas Emissions			
Impact 3.8-1: The project would generate greenhouse gas emissions, either directly or indirectly, that may have an impact on the environment.	Less than significant	Mitigation Measures MM 3.3-1b through MM 3.3-8b	Less than significant
Impact 3.8-2: The project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	Less than significant	Mitigation Measures MM 3.3-1b through MM 3.3-8b	Less than significant
Cumulative	Less than significant	Mitigation Measures MM 3.3-1b through MM 3.3-8b	Less than significant
3.9 Hazardous Materials and Safety			
Impact 3.9-1: The project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Potentially significant	**MM 3.9-1b: Hazardous Materials Business Plan.** Prior to the issuance of grading or building permits, and throughout the life of the project, including decommissioning, the project proponent shall prepare and maintain a Hazardous Materials Business Plan (HMBP), as applicable, pursuant to Article 1 and Article 2 of California Health and Safety Code 6.95 and in accordance with Kern County Ordinance Code 8.04.030, by submitting all required information to the California Environmental Reporting System (CERS) at http://cers.calepa.ca.gov/ for review and approval. 1. The HMBP shall: a. Delineate hazardous material and hazardous waste storage areas; b. Describe proper handling, storage, transport, and disposal techniques; c. Describe methods to be used to avoid spills and minimize impacts in the event of a spill; d. Describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction; e. Establish public and agency notification procedures for spills and other emergencies including fires; and f. Include procedures to avoid or minimize dust from existing residual pesticide and herbicide use that may be present on the site. 2. The project proponent shall provide that all contractors working on the project are familiar with the facility's HMBP as well as ensure that one copy is available at the generation tie-line sites at all times. 3. In addition, a copy of the approved HMBP from CERS shall be submitted to the Kern County Planning and Natural Resources Department for inclusion in the project's permanent record. **MM 3.9-2b: Recycle Construction Waste.** During construction and decommissioning of generation tie-lines, debris and waste generated shall be recycled to the extent feasible. The project proponent/operator shall designate a Recycling Coordinator to facilitate recycling of all waste through coordination with the onsite contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes. The Recycling Coordinator shall also be responsible for ensuring that wastes requiring special disposal are handled according	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		to State and County regulations that are in effect at the time of disposal. The name and phone number of the coordinator shall be provided to the Kern County Planning and Natural Resources Department. **MM 3.9-3b: Spill Prevention, Control, and Countermeasure Plan.** Prior to the issuance of grading or building permits for the generation tie-line installation, the developer shall prepare and submit a Spill Prevention, Control, and Countermeasure Plan to the California Environmental Protection Agency, and the Kern County Planning and Natural Resources Department for review. The plan will be for the storage and use of transformer oil, gasoline, or diesel fuel at the generation tie-line sites. The purpose of the plan will be to mitigate the potential effects of a spill of transformer oil, gasoline, or diesel fuel. The plan shall include design features of the generation tie-line installation project that may contain accidental releases of petroleum and transformer oil products from onsite fuel tanks and transformers. **MM 3.9-4b: Herbicide Control.** The project proponent shall continuously comply with the following: 1. The construction contractor or project personnel shall use herbicides that are approved for use by the Environmental Protection Agency, are appropriate for use in California and for application adjacent to natural vegetation areas (i.e., non-agricultural use). Workers who apply herbicides shall have all appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. 2. Herbicides shall be mixed and applied in conformance with the manufacturer's directions. 3. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife. 4. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed, and herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. 5. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated. 6. A written record of all herbicide applications on site, including dates and amounts, shall be furnished to the California State Lands Commission on a monthly basis. **MM 3.9-7b: Environmental Contamination Avoidance.** If the generation tie line crosses contaminated soils or remedial equipment on the properties that have been land-use restricted by the California Department of Toxic Substances Control, a health and safety plan must be prepared to ensure that any construction workers, nearby residents or other sensitive receptors are protected from any contaminants that may become airborne during soil disturbance. Additionally, the caps installed to contain the contaminated soil cannot be punctured.	
Impact 3.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Potentially significant	Implement Mitigation Measures MM 3.9-1b through MM 3.9-4b, MM 3.9-7b, and: **MM 3.9-5b: Notify California Department of Conservation, Division of Oil, Gas, and Geothermal Resources**. The project proponent shall comply with the following:	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		1. In the event any abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, all work shall cease in the vicinity of the well, and the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, shall be contacted for requirements and approval; copies of said approvals shall be submitted to the Kern County Planning and Natural Resources Department. 2. The California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, may determine that remedial plugging operations may be required and shall be contacted and brought to the generation tie-line site to make a proper assessment of the suspect materials.	
		MM 3.9-6b: Asbestos-containing Material. The project proponent shall comply with the following: 1. In the event that suspect asbestos-containing materials are uncovered during project construction, work within the vicinity of the discovery shall immediately halt and a certified asbestos hazardous materials professional shall be contacted and brought to the generation tie-line site to make a proper assessment of the suspect materials. 2. All potentially friable asbestos containing materials shall be removed in accordance with Federal, State, and local laws and the National Emissions Standards for Hazardous Air Pollutants guidelines prior to ground disturbance that may disturb such materials. 3. All demolition activities shall be undertaken in accordance with California Occupational Safety and Health Administration standards, as contained in Title 8 of the California Code of Regulations, Section 1529, to protect workers from exposure to asbestos. Materials containing more than 1 percent asbestos shall also be subject to Eastern Kern Air Pollution Control District's (EKAPCD) regulations. Demolition shall be performed in conformance with Federal, state, and local laws and regulations so that construction workers and/or the public avoid significant exposure to asbestos-containing materials.	
Impact 3.9-3: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.	Potentially significant	Mitigation Measure MM 3.9-7b	Less than significant
Impact 3.9-4: Exposes people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	Less than significant	**MM 3.9-8b: Fire Safety Plan.** Prior to the issuance of grading or building permits, the project proponent shall develop and implement a fire safety plan for use during construction, operation, and decommissioning. The project proponent shall submit the plan, along with maps of the project generation tie-line sites and access roads, to the Kern County Fire Department for review and approval. The fire safety plan shall contain notification procedures and emergency fire precautions including, but not limited to the following:	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		1. All internal combustion engines, both stationary and mobile, shall be equipped with spark arresters. Spark arresters will be in good working order. 2. Light trucks and cars with factory-installed (type) mufflers will be used only on roads where the roadway is cleared of vegetation. These vehicle types will maintain their factory-installed (type) muffler in good condition. 3. Fire rules will be posted on the project bulletin board at the contractor's field office and areas visible to employees. 4. Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials. 5. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires to prevent them from growing into more serious threats. 6. The project proponent shall make an effort to restrict the use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to periods outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.	
Cumulative	Potentially significant	Mitigation Measures MM 3.9-1b through MM 3.9-8b	Less than significant
3.10 Infrastructure			
Impact 3.10-1: The project would exceed wastewater treatment requirements of the applicable regional water quality control board.	Potentially significant	**MM 3.10-1b**: **Coordinate with Utility Service Providers.** Prior to construction of generation tie-lines, the developer shall coordinate with appropriate utility service providers and related agencies to determine the location of utilities and ensure that adequate wastewater treatments exist. The developer will also incorporate into construction specifications the requirement that the contractor develop a plan to reduce service interruptions. The plan shall be approved by Kern County and submitted to appropriate utility providers. Utilities to be addressed in the plan shall include, but may not be limited to: water, recycled water, sewer, gas, electricity, telephone, cable.	Less than significant
Impact 3.10-2: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Potentially significant	None required	Less than significant
Impact 3.10-3: Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Less than significant	Mitigation Measure MM 3.10-1b	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.10-4: The project has sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlement is not needed.	Less than significant	None required	Less than significant
Impact 3.10-5: Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.	Potentially significant	Implement Mitigation Measure MM 3.11-1a, and: **MM 3.10-2b: Recycling Coordinator.** During construction, operation, and decommissioning, debris and waste generated shall be recycled to the extent feasible. 1. An onsite Recycling Coordinator shall be designated by the project proponent to facilitate recycling as part of the Maintenance, Trash Abatement and Pest Management Program. 2. The Recycling Coordinator shall facilitate recycling of all generation tie-line construction waste through coordination with contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes. 3. The onsite Recycling Coordinator shall also be responsible for ensuring wastes requiring special disposal are handled according to state and county regulations that are in effect at the time of disposal. 4. Contact information of the coordinator shall be provided to the Kern County Planning and Natural Resources Department prior to issuance of building permits.	Less than significant
Impact 3.10-6: Fail to comply with federal, state, and local statutes and regulations related to solid waste.	Less than significant	None required	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.10-1b, MM 3.10-2b, MM 3.11-1b, and MM 3.16-3b	Less than significant
3.11 Land Use			
Impact 3.11-1: The project would conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the projects (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	Less than significant	None required	Less than significant
Cumulative	Potentially significant	**MM 3.11-1b: Decommission Plan.** Prior to issuance of any gen-tie building permit, the project proponent shall provide the Kern County Planning and Natural Resources Department with a Decommission Plan for review and	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		approval. The plan would be carried out by the proponent or a County-contracted consulting firm(s) at a cost to be borne by the project proponent. 1. The Decommission Plan including, but not limited to the following: a. Factor in the cost to remove the gen-tie lines and other support structures, replace any disturbed soil from the removal of support structures (including all underground equipment), and control of fugitive dust on the remaining undeveloped land. b. Salvage value for the support structures shall be included in the financial assurance calculations. c. The assumption, when preparing the estimate, is that the project proponent is incapable of performing the work or has abandoned the gen-tie lines, thereby resulting in the County hiring an independent contractor to perform the decommission work. 2. In addition to submittal of a Decommission Plan for the gen-tie lines, the project proponent shall post or establish and maintain with the County financial assurances related to the deconstruction of the gen-tie sites as identified on the approved Decommission Plan should at any point in time the project proponent determine it is not in their best interest to operate the facility. The financial assurance required prior to issuance of any building permit shall be established using one of the following: a. An irrevocable letter of credit. b. A surety bond. c. A trust fund in accordance with the approved financial assurances to guarantee the deconstruction work will be completed in accordance with the approved decommission plan. 3. The financial assurances documents shall include the following verbiage, including any required verbiage through Kern County Planning and Natural Resources Department's consultation and review with Kern County Counsel: a. Financial institution or Surety Company shall give the County a minimum of 120 days' notice of intent to terminate the letter of credit or bond. b. Financial assurances shall be reviewed annually by the respective counties or County-contracted consulting firm(s) at a cost to be borne by the project proponent to substantiate those adequate funds exist to ensure deconstruction of all solar panels and support structures identified on the approved Decommission Plan. c. Should the project proponent deconstruct the site on their own, the County will not pursue forfeiture of the financial assurance. d. Financial institution or Surety Company shall be licensed to conduct business in the state of California. 4. Once deconstruction has occurred, financial assurance for that portion of the site will no longer be required and any financial assurance posted will be adjusted or returned accordingly. Any funds not utilized through decommission of the site by the County shall be returned to the project proponent. 5. Should any portion of the generation tie-line poles not be in operational condition for a consecutive period of 24 months, that portion of the site shall be deemed abandoned and shall be removed within 60 days from the date a written notice is sent to the property owner and solar field owner, as well as the project proponent, by the County. Within this 60-day period, the property owner, solar field owner, or project proponent may provide the County a written request and justification for an extension for an additional 12 months. The Kern County Planning and Natural Resources Director shall consider any such request at a Director's Hearing as provided for in Section 19.102.070 of the Kern County Zoning Ordinance.	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		6. In no case shall a generation tie-line pole which has been deemed abandoned be permitted to remain in place for more than 48 months from the date the solar facility was first deemed abandoned.	
3.12 Noise			
Impact 3.12-1: Expose persons to or generate noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies.	Potentially significant	**MM 3.12-1b: Noise Reduction.** To reduce temporary generation-tie line construction-related noise impacts, the following shall be implemented by the project proponent: 1. In the event a noise-sensitive receptor is constructed within 1,000 feet of the tie-line site: a. Equipment staging shall be located in areas that will create the greatest distance between generation tie-line construction-related noise sources and noise-sensitive receptors nearest the tie-line site during generation tie-line construction to the extent practical. b. The project contractor shall place all stationary tie-line construction equipment so that emitted noise is directed away from sensitive receptors nearest the gen-tie line site. 2. The construction contractor shall ensure all generation tie-line construction equipment is equipped with manufacturers approved mufflers and baffles. 3. The construction contractor shall establish a noise disturbance coordinator for the project during construction of the generation tie lines. The noise disturbance coordinator shall be responsible for responding to any complaints about construction noise. The noise disturbance coordinator shall determine the cause of the complaint and shall be required to implement reasonable measures to resolve the complaint. Contact information for the noise disturbance coordinator shall be submitted to the Kern County Planning and Natural Resources Department prior to commencement of any ground disturbing activities. 4. During all construction or decommissioning phases of the generation tie-lines, the construction contractor shall limit all onsite noise-producing activities to the hours of 6:00 a.m. to 9:00 p.m., Monday through Friday, and to the hours of 8:00 a.m. and 9:00 p.m. on Saturdays and Sunday or as required through the Kern County Noise Ordinance (Municipal Ordinance Code 8.36.020). **MM 3.12-2b: Public Notification.** Prior to commencement of any generation tie line construction activities (i.e., mobilization of construction equipment, initial grading, etc.), the project proponent shall provide written notice to the public through mailing a notice. 1. The mailing notice shall be to all residences within 1,000 feet of the gen-tie sites, 15 days or less prior to generation tie-line construction activities. The notices shall include: The construction schedule, telephone number and email address where complaints and questions can be registered with the noise disturbance coordinator. 2. A minimum of one sign, legible at a distance of 50 feet, shall be posted at the generation tie line construction site or adjacent to the nearest public access to the main construction entrance throughout construction activities that shall provide the generation tie line construction schedule (updated as needed) and a telephone number where noise complaints can be registered with the noise disturbance coordinator. 3. Documentation that the public notice has been sent and the sign has been posted shall be provided to the Kern County Planning and Natural Resources Department.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.12-2: **Would the project result in the exposure of persons to, or generate, excessive groundborne vibration or groundborne noise levels.**	**Less than significant**	None required	Less than significant
Impact 3.12-3: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	Potentially significant	Mitigation Measures MM 3.12-1b and MM 3.12-2b	Less than significant
Impact 3.12-4: For a project located within the Kern County Airport Land Use Compatibility Plan (ALUCP), would the project expose people residing or working in the project area to excessive noise levels.	Less than significant	Mitigation Measures MM 3.12-1b and MM 3.12-2b	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.12-1b and MM 3.12-2b	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.13 Public Services			
Impact 3.13-1: The project would result in adverse physical impacts associated with the need for new or physically altered governmental facilities—the construction of which could cause significant environmental impacts—in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services or police protection and law enforcement services.	Less than significant	Implement Mitigation Measure MM 3.9-8b, and: **MM 3.13-1b: Funding for County Fire and Sheriff's Protection.** The project proponent shall implement the following mitigation steps at the project site: 1. For facility operation, the project proponent shall pay for impacts on countywide public protection, sheriff's patrol and investigative services, and fire services at a rate of $28.84 per 1,000 square feet of panel-covered ground for the facility operation and related onsite structures for the entire covered area of the project. The total amount shall be divided by the number of years of operation and paid on a yearly basis. If completed in phases, the annual amount shall be based on the square footage of ground covered by April 30 of each year. The amount shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year for each and every year of operation. Copies of payments made shall be submitted to the Kern County Planning and Natural Resources Department. 2. Written verification of ownership of the project shall be submitted to the Kern County Planning and Natural Resources Department by April 15 of each calendar year. If the project is sold to a city, county, or utility company with assessed taxes that total less than $1,000 per megawatt per year, then they will pay those taxes plus the amount necessary to equal the equivalent of $1,000 per megawatt. The amount shall be paid for all years of operation. The fee shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year. 3. The project proponent shall work with the County to determine how the use of sales and use taxes from construction of the project can be maximized. This process shall include, but is not necessarily limited to, the project proponent obtaining a street address within the unincorporated portion of Kern County for acquisition, purchasing and billing purposes, and registering this address with the State Board of Equalization. The project proponent shall allow the County to use this sales tax information publicly for reporting purposes. 4. Prior to the issuance of any building permits on the property, the project proponent shall submit a letter detailing the hiring efforts prior to commencement of construction; which encourages all contractors of the project site to hire at least 50 percent of their workers from the local Kern County communities. The project proponent shall provide the contractors a list of training programs that provide skilled workers and shall require the contractor to advertise locally for available jobs, notifying the training programs of job availability, all in conjunction with normal hiring practices of the contractor.	Less than significant
Cumulative	Less than significant	Mitigation Measures MM 3.13-1b and MM 3.9-8b	Less than significant
3.14 Socioeconomics and Environmental Justice			
Cumulative	Less than significant	No mitigation measures are recommended to address socioeconomic impacts related to the Alternative A, Alternative B, or Alternative C.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
3.15 Transportation			
Impact 3.15-1: The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	Less than significant	**MM 3.15-2b: Traffic Control Plan.** Prior to the issuance of construction or building permits, the project proponent shall: 1. Prepare and submit a Construction Traffic Control Plan to Kern County Public Works Department-Development Review and the California Department of Transportation offices for District 9, as appropriate, for approval. The Construction Traffic Control Plan must be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and must include, but not be limited to, the following issues: a. Timing of deliveries of heavy equipment and building materials. b. Directing construction traffic with a flag person. c. Placing temporary signing, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic. d. Ensuring access for emergency vehicles to the tie-line sites. e. Temporarily closing travel lanes or delaying traffic during materials delivery, transmission line stringing activities, or any other utility connections. f. Maintaining access to adjacent property. g. Specifying both construction-related vehicle travel and oversize load haul routes, minimizing construction traffic during the a.m. and p.m. peak hour, distributing construction traffic flow across alternative routes to access the gen-tie sites, and avoiding residential neighborhoods to the maximum extent feasible. 2. Obtain all necessary encroachment permits for the work within the road right-of-way or use of oversized/overweight vehicles that will utilize county maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the approved traffic plan and issued permits shall be submitted to the Kern County Planning and Natural Resources Department and the Kern County Public Works Department-Development Review. 3. Prior to construction, the project proponent shall submit engineering drawings of proposed access road design for the review and approval of the Kern County Public Works Department. 4. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the state and/or Kern County. 5. Submit documentation that identifies the roads to be used during construction. The project proponent shall be responsible for repairing any damage to non-county maintained roads that may result from construction activities. The project proponent shall submit a preconstruction video log and inspection report regarding roadway conditions for roads used during construction to the Kern County Public Work Department-Development Review and the Kern County Planning and Natural Resources Department. 6. Within 30 days of completion of construction, the project proponent shall submit a post-construction video log and inspection report to the County. This information shall be submitted in DVD format. The County, in consultation with the project proponent's engineer, shall determine the extent of remediation required, if any.	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 3.15-2: The project would conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards developed by the County congestion management agency for designated roads or highways.	Less than significant	Implement Mitigation Measure MM 3.15-2b and: **MM 3.15-1b: Remove Easement Obstructions.** All easements shall be kept open, clear, and free from buildings and structures of any kind pursuant to Chapters 18.50 and 18.55 of the Kern County Land Division Ordinance. All obstructions, including utility poles and lines, tees, pole signs, or similar obstructions, shall be removed from the ultimate road rights-of way in accordance with Section 18.55.030 of the Land Division Ordinance. Compliance with this requirement is the responsibility of the applicant/project proponent and may result in significant financial expenditures.	Less than significant
Impact 3.15-3: The project would substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Potentially significant	Mitigation Measure MM 3.15-1b	Less than significant
Impact 3.15-4: The project would result in inadequate emergency access.	Less than significant	Mitigation Measure MM 3.15-1b	Less than significant
Cumulative	Potentially significant	Mitigation Measures MM 3.15-1b and MM 3.15-2b	Less than significant
3.16 Water Resources			
Impact 3.16-1: The project could violate water quality standards or waste discharge requirements.	Potentially significant	Implement Mitigation Measure MM 3.9-1b, and: **MM 3.16-1b: Stormwater Pollution Prevention Plan.** Prior to issuance of a grading permit for construction or decommissioning for the generation tie-line installation, the developer shall submit a Stormwater Pollution Prevention Plan to the Kern County Engineering, Surveying, and Permit Services Department that specifies best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sediment and other pollutants from moving offsite and into receiving waters. The requirements of the Stormwater Pollution Prevention Plan shall be incorporated into design specifications and construction contracts. Best management practices categories employed onsite would include erosion control, sediment control, good housekeeping, and post-construction. Best management practices for the generation tie-line construction phase shall include, but not be limited to, those listed below. 1. Erosion Control a. Use of existing roadways to the maximum extent possible b. Limiting grading to the minimum area necessary for construction, operation and decommissioning of the project c. Encourage maintenance of existing topography and limit vegetation disturbance/removal such as through mowing to the maximum extent possible	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		2. Sediment Control a. Implementing fiber rolls and sand bags around drainage areas and the site perimeter b. Stockpiling and disposing of demolition debris, concrete, and soil properly c. Installation of a stabilized construction entrance/exit and stabilization of disturbed areas 3. 3. Good Housekeeping a. Implement proper protections for fueling and maintenance of equipment and vehicles b. Manage waste and aggressively control litter 4. 4. Post Construction a. Stabilize soil in disturbed areas either by revegetation or chemical stabilizer b. Implement any necessary drainage mitigation c. Revegetate any disturbed areas **MM 3.16-2b: Federal Emergency Management Agency Flood Zone Mapping and Strategic Construction Siting and Facility Placement.** Prior to the preparation of Final Flood Hazard Assessment and Grading Plan the developer would consult with the Federal Emergency Management Agency for flood zone mapping services of the estimated area of impact on generation tie line routes that are currently unmapped. Once flood risks are determined by the Federal Emergency Management Agency, these official flood zone boundaries would be incorporated into the final version of all technical hydrology and flood-related documents prepared for the project so that appropriate design recommendations for the projects can be made. Based on specific flood zone information, construction staging areas and final project structures would be sited to avoid existing hydrologic features (including flood zones and drainages) to the maximum extent possible. **MM 3.16-3b**: **Final Flood Hazard Assessment.** Prior to construction, a Final Flood Hazard Assessment shall be prepared for the project. The Final Flood Hazard Assessment shall describe the existing flood risks onsite and how the project structures would be designed to incorporate the requirements of the Kern County Floodplain Management Ordinance. The existing flood risks on the generation tie line routes shall be determined through developer coordination with the Federal Emergency Management Agency. For any generation tie line routes installed within flood zones, final design of the solar arrays shall include 1 foot of freeboard clearance above the calculated maximum flood depths. Where deemed necessary, generation tie line routes shall be minimally graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways without increasing the water surface elevations more than 1 foot or as otherwise required by Kern County's Floodplain Management Ordinance and in accordance with the final Grading Plan as approved by Kern County Public Works - Engineering. The Final Flood Hazard Assessment shall be approved by the Floodplain Management Section of the Kern County Engineering, Surveying, and Permit Services Department prior to the issuance of a grading permit for the project. **MM 3.16-4b: Grading Plan.** Prior to commencement of generation tie-line construction or decommissioning activities, the developer shall prepare a Grading Plan per the Kern County Grading Code and Kern County Grading Guidelines. The Grading Plan shall include the location of all existing drainages onsite, project grading details and the drainage devices and erosion control features that would be installed along the generation tie line routes to minimize excess site runoff, erosion and sedimentation. Examples of features installed onsite that would minimize runoff, erosion and sedimentation include energy dissipaters and water quality inlets. The plan shall also disclose flood protection measures implemented for structures onsite as identified in the Flood Hazard Assessment. Flood zone information used in the preparation of the Grading Plan would be based on flood zone	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		maps obtained from developer consultation with FEMA. The Grading Plan shall be approved by County prior to issuance of a grading permit.	
Impact 3.16-2: The project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.	Potentially significant	None required	Less than significant
Impact 3.16-3: The project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation and/or flooding onsite or off site.	Potentially significant	Mitigation Measures MM 3.16-1b through MM 3.16-4b	Less than significant
Impact 3.16-4: The project could create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Potentially significant	Mitigation Measures MM 3.16-1b, MM 3.16-4b, and: **MM 3.16-5b: Hydrologic Analysis and Drainage Plan.** Prior to the issuance of a grading permits for the generation tie-lines, the project proponent shall complete a hydrologic study and drainage plan designed to evaluate and minimize potential increases in runoff from the generation tie line routes. The study shall include, but is not limited to the following: 1. Numerical stormwater model for the generation tie-line site, and would evaluate existing and proposed (with project) drainage conditions during storm events ranging up to the 100-year event. 2. The study shall also consider potential for erosion and sedimentation in light of modeled changes in stormwater flow across the project area that would result from project implementation. 3. The drainage plan would include engineering recommendations to be incorporated into the project and applied within the site boundary. Engineering recommendations will include measures to offset increases in stormwater runoff that would result from the installation of generation tie lines, as well as implementation of design measures to minimize or manage flow concentration and changes in flow depth or velocity so as to minimize erosion, sedimentation, and flooding onsite or offsite. 4. The hydrologic study and drainage plan shall be prepared in accordance with the Kern County Grading Code and Kern County Development Standards, and approved by the Kern County Public Works Department prior to the issuance of grading permits for the generation tie-line installation.	Less than significant
Impact 3.16-5: The project could otherwise substantially degrade water quality.	Potentially significant	Mitigation Measures MM 3.16-1b through MM 3.16-4b	Less than significant
Impact 3.16-6: The project could place within a 100-year	Potentially significant	Mitigation Measures MM 3.16-2b through MM 3.16-4b	Less than significant

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
flood hazard area structures that would impede or redirect flood flows.			
Cumulative	Potentially significant	Mitigation Measures MM 3.9-1b, and MM 3.16-1b through MM 3.16-4b	Less than significant
5 Consequences of Project Implementation			
Impact 5-1: The project could result in an inefficient, wasteful, and/or unnecessary use of energy for transportation of materials and worker commutes.	Potentially Significant	**MM 5-1b**: The developer shall develop and implement a construction- and decommissioning-phase Transportation Energy Management Plan in consultation with Kern County and Edwards AFB to reduce construction- and decommissioning-related transportation energy consumption. The plan shall include but not be limited to the following measures: 1. Require that onsite equipment and vehicle operators minimize equipment and vehicle idling time either by shutting equipment off when not in use or by limiting idling time to a maximum of 5 minutes. 2. Designate a Transportation Energy Manager (TEM) to coordinate ridesharing by construction and decommissioning employees. The TEM shall encourage carpooling by posting commuter ride sign-up sheets, maintaining and posting an employee home zip code map. 3. Provide priority parking onsite for vehicles with two or more passengers. 4. When feasible, arrange for a single construction vendor who makes deliveries for several items. 5. Plan construction delivery and waste hauling routes to eliminate unnecessary trips. 6. The plan shall be submitted to Kern County and to Edwards AFB for review and approval prior to the start of construction.	Less than significant

CHAPTER 1
Introduction and Purpose and Need

1.1 Introduction

This Draft Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) is a joint document published by the U.S. Air Force (USAF or Air Force) and the County of Kern, California (County). The Air Force is the lead agency pursuant to the National Environmental Policy Act (NEPA), 40 Code of Federal Regulations (CFR) Parts 1500-1508. The County is a cooperating agency pursuant to the NEPA regulation in 40 CFR Section1501.6 and the California Environmental Quality Act (CEQA) lead agency pursuant to 14 California Code of Regulations (CCR) Section15051 of the guideline for implementing CEQA. This document provides information needed by the USAF and County to make a determination on whether or not to implement a solar project on the 4,000-acre Edwards Air Force Base (AFB) property (the Proposed Action). This EIS/EIR analysis evaluates at a project level the impacts of the Edwards AFB Solar Project (herein identified as the proposed project or Proposed Action).

The Air Force Proposed Action is to lease land to a developer for the construction, operation, and maintenance of a solar photovoltaic (PV) renewable energy project at Edwards AFB. The final scale of the Proposed Action is anticipated to be up to 750 megawatts (MW), with the generated energy distributed to investor-owned utilities, municipalities, and other energy off-takers. The construction scale of such a project would require one or more leases and development of up to 4,000 acres of non-excess land at Edwards AFB. Non-excess property in general terms includes those assets that are not anticipated to be needed for the duration of the lease, but which the Air Force may need at a future date or needs to retain ownership of for a mission-related reason.

A franchise agreement with the County would be required to use County franchise rights for routing of a 230-kilovolt (kV) generation-tie (gen-tie) line from the proposed solar facility to a point of interconnection where power generated by the project can be delivered to the grid. Points of interconnection may include the Southern California Edison (SCE) Windhub Substation and/or the privately owned Westwind Substation.

The proposed solar facility would be located on Edwards AFB, approximately 6 miles northeast of the community of Rosamond and 6 miles south of Mojave, in southeastern Kern County, California (**Figure 1-1**).

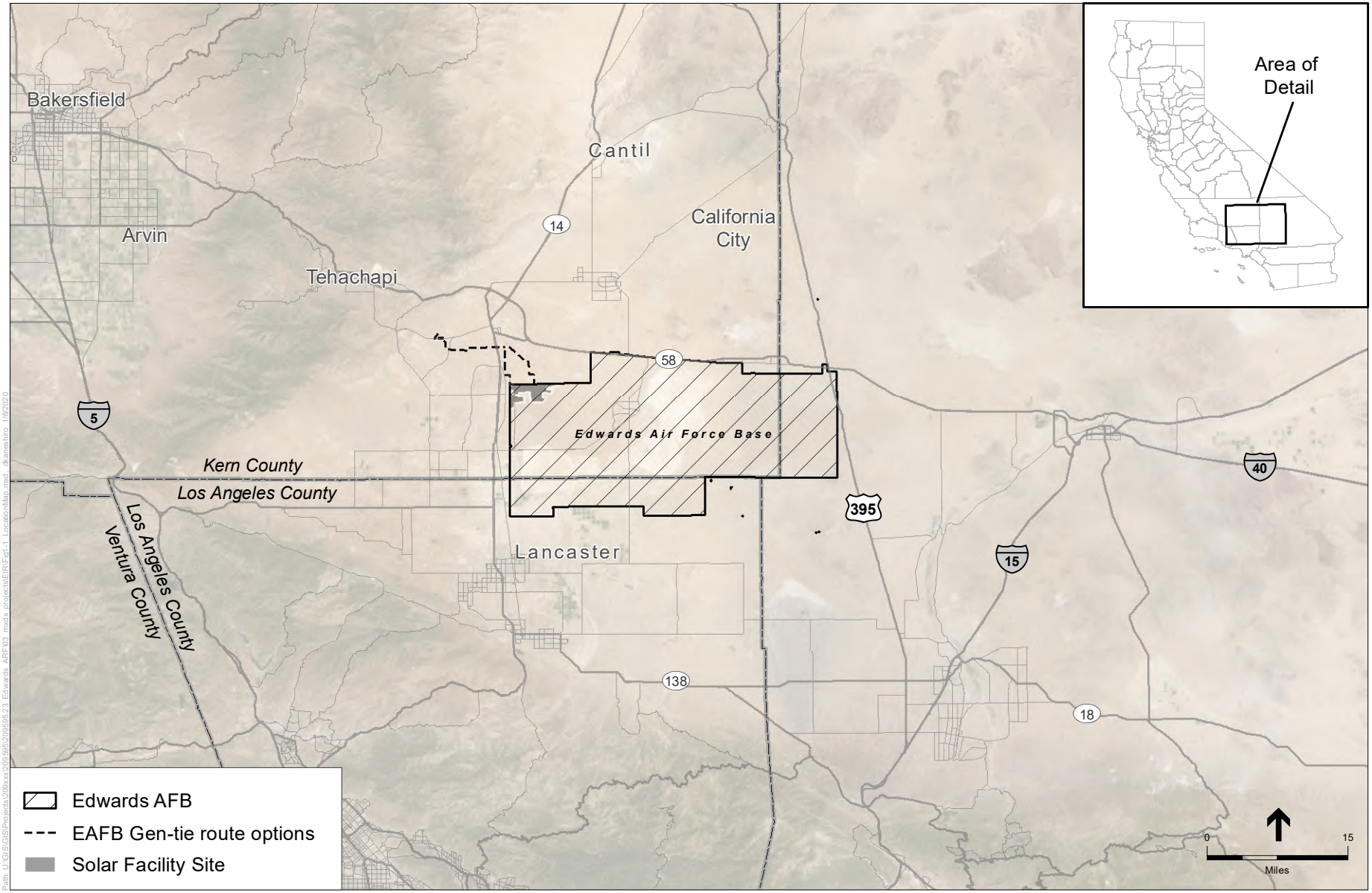

Figure 1-1: PROJECT VICINITY

Therefore, pursuant to the Air Force's Environmental Impact Analysis Process (EIAP) regulation, 32 CFR Part 989., which implements the NEPA process, and the state's CEQA guidelines (Public Resources Code Section 2100 et seq and California Code of regulations, Title 14, Section 15000 et seq), the Air Force and County are preparing this EIS/EIR to inform the public and other interested entities of the Proposed Action and alternatives and seek their comments. This EIS/EIR process is intended to provide opportunties for public involvement to better assess the Proposed Action's and alternatives' impacts to the human and natural environment. The resulting information will be considered by the Air Force to achieve a Final EIS/EIR to allow informed decision-making on whether or how to proceed with the Proposed Action and alternatives. Additionally, the County will consider the information in its determination of whether to authorize the franchise agreement. Finally, this documented information may also be considered by other governmental or regulatory agencies associated with any required consultations and/or permits for this Proposed Action and alternatives.

1.2 Background

The mission of the Air Force is to fly, fight, and win in air, space and cyberspace. The 412th Test Wing is the host wing for Edwards AFB, California. The 412th Test Wing plans, conducts, analyzes, and reports on all flight and ground testing of aircraft, weapons systems, software, and components as well as modeling and simulation for the Air Force. The wing oversees day-to-day base operations and provides support for over 10,000 military, federal civilian, and contract personnel assigned to Edwards AFB.

In 2007 the Air Force Real Property Agency (AFRPA) now known as Air Force Civil Engineer Center/Installations Directorate (AFCEC/CI) completed a comprehensive analysis of the available lands on Air Force bases and their potential to support renewable energy development through the Enhanced Use Lease (EUL) program (*Renewable Energy Enhanced Use Lease Opportunity Summary Report*; AFRPA, 2007). The EUL program allows the Air Force to lease underutilized, non-excess lands to a third party that would generate monetary or in-kind consideration to the Air Force while also optimizing the value and utility of these lands under authority granted by 10 U.S. Code (USC) Section 2667. The Air Force may lease non-excess land to third parties under specified conditions for the fair market value of the leasehold interest. Results of the 2007 analysis showed that Edwards AFB possessed considerable acreage of non-excess Air Force property that could be more fully utilized through the EUL program. The study found that approximately 6,000 acres of land in the northwest corner of Edwards AFB was suitable for renewable energy development, and had high potential and a market to support a solar energy project (AFRPA, 2007). The report concluded that development of renewable solar energy at Edwards AFB would support the Department of Defense (DoD) and Air Force renewable energy goals and achieve other value that would support base operations and maintenance projects.

In 2011, SunEdison LLC proposed development of the Oro Verde Solar Project on the approximately 6,000-acre EUL property site in the same project area currently proposed in this EIS for the Edwards AFB Solar Project. SunEdison submitted development applications to the Air Force and County and conducted several technical environmental analyses to support those applications. The Air Force and County initiated NEPA and CEQA scoping processes in May 2013.

Public scoping meetings were conducted in June 2013. In late 2014, SunEdison LLC stopped development of the project.

Upon termination of the agreement with SunEdison, LLC, the Air Force did not have an agreement in place with an energy developer and therefore revised the environmental impact analysis for the project from a site-specific analysis to a broader programmatic level of analysis to support future project planning. In June 2016, the Air Force released an updated Notice of Intent to describe this change.

In February 2017, the Air Force released a new Request for Qualifications for solar development through the EUL program. In 2017, private offerors submitted proposals to Edwards AFB to construct, operate, and maintain a utility-scale solar PV energy-generating facility. Edwards AFB property would be developed under the terms of a site development lease on up to 4,000 acres of non-excess real property under the control of the Secretary of the Air Force. A developer was selected by the Air Force and filed an application with the County for a franchise agreement for routing a gen-tie transmission line from the proposed solar facility to the SCE Windhub Substation and/or the privately owned Westwind Substation.

In November 2017, the Air Force published a new Notice of Intent to prepare a project-level EIS/EIR to once again propose and evaluate the environmental impacts of a specific project. The solar facility proposed under the current Proposed Action has the same general design and components as the former Oro Verde Solar Project proposed in 2013, and the proposed solar array continues to be sited around sensitive environmental features to reduce impacts. The gen-tie route options associated with the Proposed Action follow different alignments than those proposed for the former Oro Verde Solar Project. Because existing conditions at the site and immediately surrounding areas have not changed substantially since 2013, several of the technical environmental analyses that were prepared for the Oro Verde Solar Project have been used in the evaluation of environmental impacts of the Proposed Action. As described in further detail in Chapter 3, *Environmental Setting and Environmental Consequences*, where appropriate, additional and/or updated data has been provided to verify the applicability of the former analyses to the current Proposed Action. Additionally, new technical analyses have been conducted for the Proposed Action gen-tie alignment options.

1.3 Purpose and Need

1.3.1 NEPA

The purpose of the Proposed Action is to meet Air Force objectives to optimize the value of non-excess lands at Edwards AFB by leasing property for renewable energy development in accordance with 10 USC Section 2667 and to promote the efficient and economical use of real property assets at Edwards AFB in accordance with Executive Order (EO) 13327, Federal Real Property Asset Management. Pursuing an EUL renewable energy development would support the Air Force's requirements to meet federal renewable energy mandates while supporting efforts to achieve DoD and Air Force goals for renewable energy generation on DoD lands to enhance energy conservation, availability, and efficiencies and also reduce greenhouse gas (GHG) levels. Edwards AFB identified several thousand acres of non-excess lands it could lease at fair market value that

would achieve a higher and better land use through development of a renewable solar energy project.

DoD leasing tools such as 10 USC Section 2667, *Leases: Non-Excess Property of Military Departments and Defense Agencies*, allow the Air Force, through its EUL program, to lease non-excess real property for terms that promote the national defense or are in the public interest. In seeking solar energy development, Edwards AFB is also pursuing objectives outlined in the February 14, 2007, Department of the Air Force memorandum titled *Pursuing "Value-Based" Transactions Involving Air Force Real Property Assets*. This memorandum defines organizational responsibilities for Air Force organizations to optimize the value of real property assets using authorized tools such as the EUL program.

Additionally, the Air Force has continued to develop and refine its energy program and goals for increased energy efficiency and renewable energy production on its bases. On January 6, 2017, the Air Force released their Energy Flight Plan, 2017–2036. Goals within the energy strategy include monetizing non-excess assets such as land in return for consideration that advances energy resiliency objectives. Development of the proposed project will help the Air Force to meet the goal of optimizing the value of non-excess property while supporting Air Force energy goals. The Air Force is also working to achieve reductions of GHG emissions through energy conservation, increased energy efficiencies of its facilities, and increased consumption of its energy needs from renewable energy sources. Implementation of the Proposed Action would minimize global GHG emissions by producing energy from renewable, non-carbon-based sources instead of promoting the consumption of energy derived from fossil fuels. The proposal of leasing Air Force land for development of the Proposed Action would produce a new renewable energy source beneficial to the state and the public and would support the achievement of established federal, DoD, and Air Force energy mandates and goals.

Currently, Edwards AFB facilities must be renovated or in some cases outdated facilities may need to be demolished in order to reduce energy consumption and increase energy efficiency in accordance with 10 USC Section 2911. Lease consideration received in return for the fair market value of leased land would additionally provide Edwards AFB with the ability to implement installation projects to support its own sustainable energy efficiencies, conservation, and reduced GHG emissions goals. In accordance with a policy memorandum issued from the Undersecretary of Defense (Installations and Environment), at least 50 percent of the lease consideration generated from the EUL would be used for improving energy conservation (OSD, November 2012). Therefore, development of the Proposed Action on land leased by Edwards AFB would support successful achievement of its sustainable renewable energy goals while also optimizing the use of non-excess Air Force property in a manner consistent with national defense and public interests.

The Air Force need includes meeting the following objectives:

- Evaluate renewable energy projects on non-excess Air Force real property that would promote the efficient and economic use of federal real property under EO 13327, Federal Real Property Management and Air Force policy guidance (Air Force Policy Memorandum, February, 2007).

- Support attainment of federal, DoD, and Air Force energy and facilities mandates and goals including 10 USC Section 2911 and the Energy Flight Plan 2017-2036 (Air Force, January 2017) supporting utility-scale projects that increase renewable energy capacity and its distribution.

1.3.2 CEQA

As a cooperating agency, the County's purpose is to ensure the Proposed Action or alternatives are implemented in a manner consistent with the County's General Plan and Mojave Specific Plan, Soledad Mountain-Elephant Butte Specific Plan, West Edwards Road Settlement Specific Plan, and the Actis Interim Rural Community Plan. These plans prescribe land use designations and transportation plans in the area potentially affected by the Proposed Action, and are implemented through standards described within the Kern County Zoning Ordinance. The County is also responsible for regulating public utilities within public rights-of-way (ROWs) through the approval of franchise agreements. Franchise agreements are discretionary actions, and as such are required to comply with CEQA. The franchise agreement would permit the construction of portions of the gen-tie line within public and private ROW between the proposed Edwards AFB leased site to the point of interconnection (off Edwards AFB) of the generated renewable energy or power that is managed by public utilities under California Public Utilities Commission (CPUC) regulations.

1.4 Proposed Project Objectives

CEQA requires a statement of project specific objectives (Section 15124 of the CEQA Guidelines).

The following are the objectives for the Proposed Action:

- Establish a solar PV generating facility greater than 100 MW in order to assist the state of California in achieving the Renewable Portfolio Standard (RPS) for 2030, by providing a significant new source of renewable energy (California State Assembly Bill [AB] 32, Senate Bill [SB] 1078, SB 107, SB 350, and SB 2).
- Supply clean, safe, renewable energy.
- Produce and transmit electricity at a competitive cost and in a manner that is eligible for commercial financing.
- Use technology that is available, proven, efficient, easily maintained, recyclable, and environmentally sound.
- Support the economic development of Kern County, Los Angeles County, and the State of California.
- Enhance existing electrical distribution infrastructure and provide greater support to existing and future customer loads.
- Minimize environmental effects by:
    - Using existing electrical distribution facilities, ROW, roads, and other existing infrastructure, where practicable
    - Minimizing impacts on threatened and/or endangered species
    - Minimizing water use; and

  - Reducing GHG emissions.
- Advance Department of Defense energy resilience and security goals by optimizing the value of under-utilized Air Force real property assets consistent with Department of Defense Instruction 4170.11, Installation Energy Management and the Air Force Energy Flight Plan, 2017–2036.

1.5 Scope of the EIS/EIR and Decisions to Be Made

The scope of this EIS/EIR document evaluates all components of the Proposed Action and alternatives that would be associated with establishment of the proposed solar facility. This analysis describes and evaluates the potential environmental effects that are expected to result from construction, grid connection, operation, and maintenance of the Proposed Action and alternatives and discusses mitigation measures that, if adopted, would avoid, minimize, or mitigate significant adverse environmental impacts identified.

This EIS/EIR describes reasonable alternatives to the Proposed Action as well as the environmental consequences of the Proposed Action and alternatives. This document will also comply with applicable CEQA requirements and guidelines and will allow the County to use this EIS/EIR in its environmental review and approvals for the gen-tie line Franchise Agreement with the Developer and other pertinent development or construction permit applications and approvals. Where the applicable Air Force and/or County regulations for the proposed project and alternatives require a higher standard of environmental analysis, then the stricter requirements are used to complete the appropriate level of environmental analysis. For example, CEQA requires that a separate discussion of mitigation measures and growth inducing impacts be included during consideration of a proposal. These factors will be included in this EIS/EIR to meet CEQA requirements.

Normally, a solely federal action occurring on Air Force lands would not require the issuance of state or local discretionary permits that trigger the CEQA Guidelines and requirements. Ordinarily, the County's land use regulations do not apply to federally owned and administered real property; however, this Proposed Action involves private commercial development on principally leased property from the Air Force, who owns the land with proprietary jurisdiction. The Proposed Action also requires development (off Edwards AFB) on private and/or public lands. Therefore, the Developer would be required to obtain applicable state and/or local permits, licenses, approvals, or agreements triggering CEQA compliance. The Proposed Action under the Air Force's EUL Program generates compliance with NEPA regulations and the Air Force's implementing EIAP regulations.

The environmental impacts and mitigations and monitoring would reflect the requirements applicable to private or public development and construction by the Developer in the state of California and its CEQA guidelines and requirements. After the EIS/EIR is completed, the Air Force will prepare a Record of Decision (ROD) that will address key decisions issues and conditions, including significant adverse impacts associated with the Proposed Action under applicable federal and state or local laws, regulations, and requirements. Further, the Air Force has requested that Kern County serve as permit authority over any permits required for construction and operation of the project. In the absence of a Memorandum of Understanding (MOU) indicating

otherwise, a county's land use regulations would not automatically apply to property administered by federal and state governments. However, for private commercial or public development on Air Force–leased land, the Developer would need to seek Kern County building permits and other permits and approvals as applicable and the Developer will be responsible for implementing necessary mitigation measures.

The EIS/EIR will also discuss proposed mitigation measures needed to reduce environmental impacts. Additionally, the County will use the information in this document to consider authorization of a franchise agreement to the Developer for routing the gen-tie line from the proposed PV facility to its point of interconnection off Edwards AFB.

Upon publication of a Final EIS/EIR that considers and addresses all public comments received, the Air Force will prepare a ROD on whether to authorize the lease of Air Force property to the Developer for use in construction of a solar PV facility pursuant to the Air Force EIAP regulations. The County Board of Supervisors will evaluate the EIS/EIR and public comments, and will issue a Notice of Determination taking action on the application for a franchise agreement for a gen-tie within the County-controlled ROW.

1.6 Issues to Be Addressed

The environmental issues evaluated in this EIS/EIR include the physical, biological, cultural, socioeconomic, and other resources that have the potential to be affected by activities related to the Proposed Action and alternatives. This analysis includes an evaluation of impacts to the following resources:

- Aesthetics (NEPA and CEQA)
- Agricultural and Forest Resources (NEPA and CEQA)
- Air Quality (NEPA and CEQA)
- Airspace Management and Use (NEPA and CEQA)
- Biological Resources (NEPA and CEQA)
- Cultural and Paleontological Resources (NEPA and CEQA)
- Environmental Justice and Socioeconomics/Population and Housing (NEPA and CEQA)
- Geology, Minerals, and Soils (NEPA and CEQA)
- Greenhouse Gas Emissions (NEPA and CEQA)
- Hazards, Hazardous Materials, and Safety (NEPA and CEQA)
- Infrastructure and Utilities Service Systems (NEPA and CEQA)
- Land Use (NEPA and CEQA)
- Noise (NEPA and CEQA)
- Public Services (NEPA and CEQA)
- Transportation and Traffic (NEPA and CEQA)

- Hydrology and Water Quality (NEPA and CEQA)

In January 2018, the Governor's Office of Planning and Research (OPR) submitted its proposal for the comprehensive updates to the CEQA Guidelines to the California Natural Resources Agency. Among OPR's proposed Guideline amendments were those for analyzing transportation impacts pursuant to Senate Bill 743, proposed updates to the analysis of greenhouse gas emissions, and revised Section 15126.2(a) in response to the California Supreme Court's decision in California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369.

Because this Draft EIS/EIR was substantially complete prior to implementation of the updated CEQA Guidelines, the Lead Agency evaluated this EIS/EIR against the revised CEQA Guidelines to verify consistency of the analyses presented in the EIS/EIR with the revised thresholds. This evaluation is presented in Appendix A7 of this EIS/EIR.

1.7 Public Participation, Coordination, and Permitting

Section 1.7 discusses how the EIS/EIR process will proceed, including a discussion of public participation opportunities throughout the process, interagency consultation and coordination, and project permitting.

1.7.1 Public Participation

Public participation is a dynamic process that continues throughout the preparation of an EIS/EIR. Scoping for the project was initiated with the publication of the Notice of Intent (NOI) in the Federal Register and Notice of Preparation (NOP) on November 27, 2017. Edwards AFB and Kern County held a scoping meeting after the publication of the NOI and NOP to formally solicit public and agency input on issues to be addressed in the EIS/EIR. In addition, the Air Force and the County have coordinated with affected local, state, and federal agencies on issues of concern. Public and agency comments are also being sought on the information, analysis, and conclusions presented in this EIS/EIR. The results of the scoping process are summarized below.

1.7.2 Scoping Requirements

Scoping is required by NEPA and CEQA regulations. The process ensures that significant issues, alternatives, and impacts are addressed in environmental documents and determines the degree to which these issues and impacts will be analyzed in the EIS/EIR.

1.7.2.1 Scoping Process

The scoping process for the Edwards AFB Solar Project EIS/EIR included the following:

- Publishing the NOP and NOI to prepare an EIS/EIR;
- Conducting public scoping meetings; and
- Documenting all public and agency comments received for the proposed project in a Public Scoping Report.

Each of these components is discussed below.

NOP and NOI

As required by CEQA Guidelines Section 15082 (14 CCR 15000 et seq.), the County issued an NOP on November 27, 2017, that summarized the proposed project, stated the County's intention to prepare a joint EIS/EIR with the Air Force, and requested comments from interested parties.

To comply with NEPA (40 CFR 1501.7), the Air Force published the NOI in the Federal Register to prepare a joint EIS/EIR for the project (FR Vol. 82, No. 226, page 56009, November 27, 2017). The NOI serves as the official legal notice that a federal agency is commencing preparation of an EIS. The Federal Register serves as the U.S. Government's official noticing and reporting publication. The NOI initiates the public scoping period for the EIS, provides information about the proposed project, and serves as an invitation for other federal agencies granted cooperating agency status to provide comments on the scope and content of the EIS. As part of scoping, the USAF informed the public and appropriate agencies the Proposed Action would occur within floodplain areas as required by EO 11988, Floodplain Management, and EO 11990, Protection of Wetlands. Comments received during the 2017 scoping period have been considered by the USAF, and are addressed accordingly in the analysis presented in this EIS/EIR.

The NOP/NOI was filed with the State Clearinghouse and distributed to federal, state, regional, and local agencies and organizations; school districts; local libraries; Native American groups; and private firms and individuals. The public notice ran in the local newspaper and was sent to the general distribution list of all those identified as property owners within a 5-mile radius of the project site. The NOP was made available to the public on Kern County's website at: http://www.co.kern.ca.us/planning/pdfs/notices/EAFB_solar_nop.pdf, to all identified property owners within a 1,000 foot radius of the project site and to any parties of concern.

The comment period for the NOP and NOI ended on December 27, 2017.

Public Scoping Meeting

During the NOP/NOI comment period, the County and Air Force held a public scoping meeting. The scoping meeting provided government agencies and the public the opportunity to receive information on the CEQA/NEPA process and on the project and to provide verbal and written comments. The County and Air Force held a public scoping meeting on December 12, 2017, at the Mojave Veterans Hall located at 15580 O Street in Mojave, California. Approximately 30 people attended the public scoping meeting, including representatives from local organizations and private citizens. Ten members of the public provided spoken comments at the meeting.

As a result of public comments received during the scoping process, the Developer revised the project design to remove gen-tie route option, specifically North-South-Gen-Tie Route Option 3 as shown on Figure 2 of Initial Study/NOP and to include crossing Option C, which is presented in Section 2.3.2.2 and shown in Figure 2-4 of this EIS/EIR.

Scoping Report

The scoping comment period ended on December 27, 2017. In total, 13 comment letters were received: 12 from federal, state, and local agencies and organizations and 1 from individuals. These comments are incorporated into the EIS/EIR project record and are documented and summarized in a scoping report prepared in January 2018. The scoping report contained information received during the public scoping comment period. Comments received during the scoping period were grouped into the following categories:

1. Project Description
2. Air Quality
3. Biological Resources
4. Cultural Resources
5. Hazards
6. Land Use
7. Public Services
8. Traffic
9. Water Resources
10. Indirect and Cumulative Impacts
11. Project Alternatives

1.7.3 Public Comment Process

Air Force EIAP and CEQA require the lead agency to provide the public with a full disclosure of the expected environmental consequences of a proposed project, as well as the opportunity to provide comments. Therefore, the Air Force and County provided the public with a 30-day scoping window to review and comment on the proposal. This 30-day public scoping period was announced in the Federal Register and in local newspapers on November 27, 2017. The County and Air Force held one public scoping meeting (meeting details are provided in Section 1.7.2.1 above). Public comments were used to assist in the shaping and modification of project alternatives evaluated in the analysis.

This Draft EIS/EIR is being distributed directly to agencies, organizations, and interested groups and persons for comment during a 45-day formal public review period in accordance with 32 CFR Section 989.19(c) of EIAP and Section15105 of the CEQA Guidelines. The Draft EIS/EIR, including all supporting studies, is available for review during normal business hours at the Kern County Planning and Natural Resources Department, located at:

Kern County Planning and Natural Resources Department
2700 “M” Street, Suite 100
Bakersfield, CA 93301-2370
Phone: (661) 862-8600, Fax: (661) 862-8601
https://kernplanning.com/planning/environmental-documents/

and also at the following libraries:

Kern County Library – Rosamond Branch
3611 Rosamond Boulevard
Rosamond, CA 93560
Phone: (661) 256-3236

Kern County Library – Mojave Branch
15555 O Street
Mojave, CA 93501
Phone: (661) 824-2243

Kern County Library – California City Branch
9507 California City Boulevard
California City, CA 93505
Phone: (760) 373-4757

Los Angeles County Library – Lancaster Branch
601 W Lancaster Boulevard
Lancaster, CA 93534
Phone: (661) 948-5029

The Air Force and Kern County have also made the Draft EIS/EIR available for download at:

https://kernplanning.com/planning/environmental-documents/

A Notice of Availability (NOA) for the Draft EIS/EIR will be published in the Federal Register with announcements made in the Antelope Valley Press, the [Mojave Newspaper], and the [Rosamond Newspaper] initiating the 45-day public comment period. Written comments may be submitted to either the Edwards AFB Public Affairs Office or the Kern County contact below:

U.S. Post: Gary Hatch, Environmental, Public Affairs
Bldg. 1405 Room 400
Edwards Air Force Base, CA 93524
Phone: (661) 277-8707
Fax: (661) 277-2732
Email: 412tw.pae@edwards.af.mil

or

U.S. Post: Kern County Planning and Natural Resources Department
Attn: Janice Mayes
2700 “M” Street, Suite 100
Bakersfield, CA 93301
Phone: (661) 862-8793
Email: MayesJ@kerncounty.com

During the 45-day comment period the Air Force will conduct public hearings. The time and location of the hearings will be announced in the Antelope Valley Press, the [Mojave Newspaper],

and the [Rosamond Newspaper]. The Air Force and County will review and respond to comments on this Draft EIS/EIR and modify analysis as necessary before publishing the Final EIS/EIR for public review.

1.7.3.1 NEPA

An NOA for the Final EIS/EIR will be announced in the Federal Register as well as in the Antelope Valley Press, the [Mojave Newspaper], and the [Rosamond Newspaper]. The Air Force will not issue a ROD until a minimum of 30 days has passed from the time the publication of the Final EIS/EIR is announced.

Once a minimum of 30 days has passed and all information and public comments have been reviewed, the Air Force will publish a Notice of Availability for the ROD in the Federal Register as well as in the Antelope Valley Press, the [Mojave Newspaper], and the [Rosamond Newspaper]. The NOA will announce the Air Force decision regarding the Proposed Action.

1.7.3.2 CEQA

After responses to public comments have been developed by the Air Force and County, and an ROD has been issued by the Air Force, a public hearing will be held by the Board of Supervisors to render a decision on the application for a franchise agreement.

1.7.4 Interagency Consultation and Coordination

This section describes coordination between the NEPA and CEQA lead agencies and other federal, state, and regional agencies with regulatory authority over aspects of the project.

1.7.4.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has the responsibility to protect aquatic ecosystems, including water quality and wetland resources under Section 404 of the Clean Water Act. Under that authority, the USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, are subject to Section 404's permit requirements. An approved jurisdictional determination was issued by USACE for the Sunlight Partners Solar Array Project on June 7, 2013 (USACE, 2013) and is included as Appendix B17 to this EIS/EIR. USACE considered and evaluated potential jurisdictional waters and/or wetlands within the review area and determined that these waters do not have wetlands and/or jurisdictional wetlands or waters. The review area included the Antelope Valley Watershed, excluding the areas of Lake Palmdale and all waters tributary to Rosamond, buckhorn, and Rogers Lakes, and Lake Palmdale. This review area evaluated by USACE in 2013 encompassed the proposed solar facility site on Edwards AFB and the proposed gen-tie line route options within Kern County. Thus, the proposed solar facility site on Edwards AFB and the gen-tie line route options within Kern County are located in an area that has been determined by the USACE to be an area where there are not any wetlands and/or jurisdictional wetlands or waters. At this time, a Section 404 permit would not be required (USACE, 2013).

1.7.4.2 California Department of Fish and Wildlife

The California Fish and Game Code (Section 1602) requires an entity to notify the California Department of Fish and Wildlife (CDFW) of any proposed activity that may:

- Substantially divert or obstruct the natural flow of any river, stream or lake.
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake.
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. If CDFW determines that the solar development activities may substantially adversely affect fish and wildlife resources, a Streambed Alteration Agreement will need to be prepared. A jurisdictional delineation of waters of the state was conducted on 3,032 acres of the biological resources study area. In the remainder of the study area, a map-based analysis of potentially jurisdictional waters was conducted (Dudek, 2018b). Additionally, a jurisdictional delineation of waters of the state was conducted along the gen-tie (Dudek, 2018a). A review of streambeds within the EUL Study Area was prepared in 2011 (URS, 2011); however, delineations have not been completed in either the on-base review area or gen-tie study area. This document would be used to complete a Streambed Alteration Agreement under Section 1602 of the California Fish and Game Code.

1.7.4.3 California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over encroachments to Caltrans facilities and related easements and ROWs. During construction, the proposed project would require the delivery of heavy construction equipment and PV solar components using area roadways, some of which may require transport by oversize vehicles. The need for and number of escorts, California Highway Patrol escorts, as well as the timing of transport, would be at the discretion of Caltrans and Kern County, and would be detailed in respective oversize load permits.

1.7.4.4 Eastern Kern Air Pollution Control District

The project is located within the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD), which reviews the plans and specifications for construction in the project area. The EKAPCD would assess emissions and possible air contamination resulting from construction and operational activities (e.g., road dust, windblown contaminants, and emissions from construction activities).

1.7.4.5 Regional Water Quality Control Board

Under Section 401 of the Clean Water Act, the Regional Water Quality Control Board (RWQCB) must certify that actions receiving authorization under Section 404 of the Clean Water Act also meet state water quality standards. The RWQCB also regulates waters of the state under the Porter-Cologne Act Water Quality Control Act (Porter Cologne Act). The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland

acreage or a net loss of wetland function and values. The RWQCB typically requires compensatory mitigation for impacts to wetlands and/or waters of the state. The RWQCB also has jurisdiction over waters deemed "isolated" or not subject to Section 404 jurisdiction. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state, and prospective dischargers are required obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of the Porter-Cologne Act. This document would be used to complete permitting under the Porter-Cologne Act by the RWQCB.

1.7.5 Consultation Processes for ESA Section 7, NHPAs

1.7.5.1 ESA Section 7 Compliance

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction to protect threatened and endangered species under the Endangered Species Act (ESA) [16 USC Section 1531 et seq.]. Formal consultation with USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally listed species. On February 22, 2008, the Air Force requested formal consultation with USFWS pursuant to Section 7 of the ESA for predicted base-wide activities at Edwards AFB regarding the effects of federally threatened desert tortoise (*Gopherus agassizii*). On March 11, 2014, USFWS issued the Biological Opinion (BO) for Operations and Activities at Edwards Air Force Base, California. The proposed project was included among the base-wide activities assessed in the BO.

1.7.5.2 NHPA Section 106 Compliance and Tribal Consultation

Federal agencies must demonstrate compliance with the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470, et seq.). Section 106 of the NHPA requires a federal agency with jurisdiction over a project to evaluate the effect of the proposed project on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP). Federal agencies must also provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the effects of the proposed project to those properties.

A literature review, records searches, and cultural resources surveys has been completed to identify historic properties within the project Area of Potential Effect (APE). A Native American Heritage Commission (NAHC) Sacred Lands File search was also completed, which included a list of individuals and groups indicated by the NAHC as having affiliation with the project APE and whom the NAHC recommends that the Developer consult regarding the project and potential effects to Native American cultural resources and sacred sites. Edwards AFB initiated Section 106 consultation with these individuals and groups to ensure that Native American resources and places of traditional cultural or religious concern are taken into account.

Edwards AFB consults with federally recognized Tribes on a government-to-government basis in accordance with several authorities including NEPA, the NHPA, the American Indian Religious Freedom Act, and EO 13007. Under Section 106 of the NHPA, the Air Force consults with federally recognized Tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on historic properties important to these tribal communities that may be affected by Edwards AFB's undertakings. Section 3.6 includes discussion of Edwards AFB Tribal consultation on the Proposed Action.

1.7.5.3 Assembly Bill 52 Compliance and Tribal Consultation

The consultation conducted by the County under AB 52 pertains to the CEQA component of the project, and specifically the gen-tie route options. On November 27, 2017, the County mailed AB 52 consultation notification letters to Native American groups and individuals identified on the County's AB 52 consultation list via certified mail. The contact list included four tribal representatives from three tribes: Torres Martinez Desert Cahuilla Indians, San Manuel Band of Mission Indians, and Twenty-Nine Palms Band of Mission Indians. The notification letter provided details on the project, a map of the project site, and an invitation to consult.

On December 13, 2017, Ms. Jessica Mauck, Cultural Analyst with the San Manuel Band of Missions Indians, responded by email stating that the project lies within Serrano ancestral territory and is therefore of interest to the Tribe. The email also notes that the San Manuel Band of Mission Indians is already consulting with Edwards AFB for the portion of the project within the base, and therefore also elects to consult under CEQA with the County. The Tribe requested copies of the cultural resources technical reports for the gen-tie route options for review. On December 18, 2017, the County submitted the gen-tie route options cultural resources report to the Tribe.

On January 18, 2018, Mr. Anthony Madrigal, Jr., Tribal Historic Preservation Officer (THPO) with the Twenty-Nine Palms Band of Mission Indians, replied by letter stating that while the THPO is not aware of any resources within the project area that pertain to the Twenty-Nine Palms Band of Mission Indians, the project may have the potential to significantly impact resources of concern to the Tribe. The Tribe further requested that they be allowed to review the cultural resources technical reports for the project and be informed of the distribution of the EIS/EIR. The County submitted the cultural resources technical reports to the Tribe on January 30, 2018.

Consultation with the San Manuel Band of Mission Indians and Twenty-Nine Palms Band of Mission Indians is ongoing.

1.7.6 Responsible and Trustee Agencies (CEQA)

Projects or actions undertaken by the County, as the CEQA lead agency, may require subsequent oversight, approvals, or permits from other public agencies in order to be implemented. The County and the Air Force are coordinating with the following state and local agencies as part of this environmental planning process.

1.7.6.1 State Agencies

- State Lands Commission
- California Department of Fish and Wildlife
- California Office of Historic Preservation
- California Air Resources Board
- California Department of Transportation
- Regional Water Quality Control Board – Lahontan Region
- California Public Utilities Commission

- State Water Resources Control Board

1.7.6.2 Local Agencies

- Eastern Kern Air Pollution Control District
- Kern County Environmental Health Services Department
- Kern County Roads Department
- Kern County Fire Department

1.8 Permitting Requirements

The project would be required to obtain a number of special permits before construction or solar energy field operation may proceed. It would be the responsibility of the Developer to obtain the permits required for construction, operation, and maintenance of the proposed EUL facility. Potential permits and approvals that may be required for this project are listed below.

- **Franchise Agreement:** The Developer is responsible for obtaining a Franchise Agreement with Kern County to utilize County franchise rights for routing the gen-tie line from the project area to the Windhub Substation and/or Westwind Substation.
- **Air Force Outgrants:** The Developer shall obtain one or more leases and non-exclusive easements as authorized by 10 USC 2667 and 10 USC 2668; and executed in accordance with Air Force Instruction 32-9003, Granting Temporary use of Air Force Real Property.
- **Encroachment Permit:** The Developer is responsible for obtaining an Encroachment Permit from Caltrans for encroachment into the State Route (SR) 14 ROW.
- **State Lands Commission Permit:** The Developer is responsible for obtaining a State Lands Commission Permit for a portion of the gen-tie line that would cross state lands.
- **Easement by Ordinance:** The Developer must obtain an easement to cross the Los Angeles Department of Water and Power's 230 kV and 500 MW transmission lines.
- **Easement from Los Angeles Department of Water and Power:** The Developer is responsible for obtaining an easement to cross the Los Angeles aqueduct.
- **Air Force's Section 7 Consultation:** The Air Force is responsible for consulting with the USFWS pursuant to Section 7 of the federal ESA.
- **Air Force's Section 106 Consultation:** The Air Force is responsible for consulting with federally recognized tribes and SHPO pursuant to Section 107 of the NHPA.
- **Determination of No Hazard to Air Navigation:** The Developer is responsible for obtaining a determination of No Hazard to Air Navigation from the Federal Aviation Administration.
- **Incidental Take Permit:** The Developer is responsible for obtaining an incidental take permit pursuant to Section 2081 of the California ESA if take of state-listed species is required. The Air Force is responsible for obtaining an incidental take permit for federally listed species.

- **Streambed Alteration Agreement:** The Developer is responsible for obtaining a Streambed Alteration Agreement pursuant to Sections 1600–1603 of the California Fish and Game Code.
- **Waste Discharge Requirements:** The Developer is responsible for complying with waste discharge requirements pursuant to the California Water Code with the Lahontan RWQCB.
- **Railroad Encroachment Permit:** The Developer is responsible obtaining a permit for a new wireline crossing/encroachment over multiple Union Pacific Railroad railways.
- **Eastern Kern Air Pollution Control District Permit:** The Developer is responsible for obtaining a permit to Construct/Operate from the EKAPCD.
- **Road Encroachment Permit:** The Developer is responsible for obtaining an encroachment permit from the Kern County Roads Department to enter the road's ROW.
- **NPDES General Permit:** The Developer is responsible for obtaining a permit for Storm Water Discharges Associated with Construction Activities from the Lahontan RWQCB.
- **Air Force Notice to Proceed:** The Developer shall obtain a Notice to Proceed from the Air Force Civil Engineer Center, Installations Director or his/her delegated authority prior to undertaking any demolition or construction work on the Air Force outgrant premises.
- **Grading and Building Permits:** The Developer is responsible for obtaining grading and building permits from Kern County.
- **Septic Systems Permit:** The Developer is responsible for obtaining a permit for any proposed septic systems from Kern County Environmental Health Services Department.
- **Air Force Form 103:** The Developer is responsible for obtaining an Air Force Form 103, Dig Permit, from Edwards AFB.
- **Well Abandonment Approval:** The Developer is responsible for obtaining a well abandonment approval from the RWQCB and Edwards AFB.

1.9 Related Documents Incorporated by Reference

This section discusses related plans and documents that are incorporated into this EIS/EIR process by reference. In accordance with 40 CFR Section 1506.3 of NEPA regulations and Section 15150 of the CEQA Guidelines, to reduce the size of the EIS/EIR report, the following documents are hereby incorporated by reference and are available for public review at the Kern County Planning and Natural Resources Department. A brief synopsis of the scope and content of these documents is provided below.

- **Edwards Air Force Base Installation Development Plan:** The Edwards AFB Installation Development Plan, adopted in April 2012, supports the Air Force Test Center Commander's priorities and goals for Edwards AFB. It serves as a guide for future development and provides general background information in land use growth patterns and provides a way to balance investments on the installations' infrastructure.
- **Edwards Air Force Base Integrated Natural Resource Management Plan:** The Edwards AFB Integrated Natural Resource Management Plan serves as a guide for protecting the natural resources found on and in the vicinity of the base.

- **Edwards Air Force Base Integrated Cultural Resource Management Plan:** The Edwards AFB Integrated Cultural Resource Management Plan serves as a guide for protecting the cultural resources found on and in the vicinity of the base.
- **Kern County General Plan:** The Kern County General Plan is a policy document with land use maps and related information that are designed to give long-range guidance to County officials making decisions affecting the growth and resources of Kern County, excluding the metropolitan Bakersfield planning area. This document, adopted on June 14, 2004, and last amended on September 22, 2009, helps to ensure that day-to-day decisions conform to the long-range program designed to protect and further the public interest as related to the County's growth and development and mitigate environmental impacts.
- **Mojave Specific Plan:** The Mojave Specific Plan area is located along a stretch of SR 14, around the community of Mojave. The Mojave Specific Plan area encompasses nearly 31,000 acres (50 square miles) in eastern Kern County in the Antelope Valley area. It addresses issues of importance in the planning area by stating goals, objectives, policies, and implementation measures to accommodate growth while protecting the community's unique business, transportation, and environmental resources.
- **South of Mojave-Elephant Butte Specific Plan:** The South of Mojave-Elephant Butte Specific Plan was adopted in 1973 to guide development in the area south of Mojave. Specifically, the plan covers an area of approximately 9,300 acres to the north and south of Silver Queen Road, west of SR 14. The South of Mojave-Elephant Butte Specific Plan contains recommendations and implementation measures addressing housing, business, industry, open space, recreation, circulation, and other land uses within the plan area.
- **West Edwards Road Settlement Specific Plan:** The community of West Edwards Road Settlement is a Kern County unincorporated community located in the Antelope Valley area of the Mojave Desert. The plan area covers approximately 3,280 acres and is adjacent to and north of the Edwards AFB. It was designated a Specific Plan Required area because it is a recognizable small community that is too large to meet the "Rural Community" criteria of the Kern County General Plan. The Specific Plan was prepared and adopted in 1992 to recognized existing development and prepare for project community growth.
- **Actis Interim Rural Community Plan:** The Actis Interim Rural Community Plan covers the area surrounding the intersection of Backus Road and SR 14, approximately 7 miles south of Mojave. Interim Rural Community Plans apply to rural community areas until the time that a formal Specific Plan is adopted for the community. Because no formal text plan has yet been adopted for the community of Actis, the goals and policies of the Kern County General Plan would be applicable to portions of the project that pass through the proposed project area.
- **Kern County Zoning Ordinance:** The County zoning ordinance was adopted to promote and protect the public health, safety, and welfare through the orderly regulation of land uses throughout the unincorporated area of the county. The zoning ordinance is intended to support orderly and planned use of land resources, encourage and guide development in a manner consistent with the Kern County General Plan and regulate structures, yard configuration, population density, land use, and other facets of county development.
- **Kern County Airport Land Use Compatibility Plan:** The Kern County Airport Land Use Compatibility Plan (ALUCP) was originally adopted in 1996 and has since been amended to comply with Aeronautics Law and Public Utilities regarding public airports and surrounding land use planning. As required by that law, proposals for public or private land use developments that occur within defined airport influence areas are subject to

compatibility review. The principle airport land use compatibility concerns addressed by the plan are: (1) exposure to aircraft noise, (2) land use safety with respect to both people and property on the ground and the occupants of aircraft, (3) protection of airport air space, and (4) general concerns related to aircraft overflights. The ALUCP identifies policies and compatibility criteria for influence zones or planning area boundaries.

- **Kern County Housing Element:** The development and preservation of adequate and affordable housing is important to the well-being of the residents and the economic prosperity of the county. To plan for the development of adequate housing for all income segments, a housing element was prepared as a part of the Kern County General Plan. This document specifically addresses housing needs and resources in the County's unincorporated areas. This Housing Element must maintain consistency with the other elements of the Kern County General Plan.

1.10 Implementation, Monitoring, and Enforcement

1.10.1 Implementation

The lead agencies will continue to involve and collaborate with the public during project implementation if the project is approved. Opportunities to become involved during implementation and monitoring could include development of partnerships and community-based citizen working groups. Citizens and user groups within the vicinity of the project are invited to become actively involved in implementation, monitoring, and enforcement of decisions. The Lead Agencies and citizens could collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or play on the public lands.

1.10.2 Monitoring

The lead agencies would monitor activities under their jurisdiction throughout the life of the project to ensure that decisions are implemented in accordance with the approved ROD and EUL grant, and County Franchise Agreement. Monitoring would be conducted to determine whether decisions, best management practices (BMPs), and approved mitigation measures are achieving the desired effects. Effectiveness monitoring would provide an empirical data base on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring also would be useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

1.10.3 Enforcement and Adaptive Management

The Air Force as NEPA Lead Agency will incorporate adaptive management into mitigation for the solar facility portion of the project. Adaptive management is a system of management practices based on clearly identified outcomes, monitoring to determine whether management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes. This system is in effect developing an adaptive process as an implementation tool that goes beyond the traditional "predict-mitigate-implement" model and incorporates the "predict-mitigate-implement-monitor-adapt" adaptive management model. Put another way, adaptive management is a system of management practices based on clearly identified

outcomes, monitoring to determine whether management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes. Adaptive management has been incorporated into the mitigation measures adopted for the Proposed Action. Procedures include:

- Determining environmental effects of a project and identifying mitigation needs along with other permitting and regulatory requirements. Analysis should indicate where data are lacking and uncertainty exists with respect to the intended outcomes and the significance of this lack (see 40 CFR Section1502.22).
- Monitoring designed for adaptive management must be able to result in appropriate adjustments in project activities as the project is constructed and planned mitigation is installed.
- Striving to ensure public input into and understanding of the principles of adaptive management.
- Maintaining open channels of information to the public and affected regulatory and permitting agencies during the application of adaptive management, including transparency of the monitoring process that precedes adaptive management and the decision-making process that implements it. This involves: (a) identifying indicators of change, (b) assessing monitoring activities for accuracy and usefulness, and (c) making changes in tactics, activities and/or strategies.
- Providing post-activity opportunity for public and affected outside agency review of adaptive management practices, including practices that were exceptions to any resource management plans or that had permitting and other regulatory requirements not satisfied by prior coordination.

Adaptive management allows agencies, in their environmental reviews, to establish and analyze mitigation measures that are projected to result in the desired environmental outcomes and to identify those mitigation principles or measures that it would apply in the event the initial mitigation commitments are not implemented or effective.

1.11 Document Organization

The Draft EIS/EIR is organized as follows:

Executive Summary provides a brief summary of the Proposed Action and feasible and reasonable alternatives as well as a description of the affected environment and environmental consequences of implementing the Proposed Action.

Chapter 1 provides general background on the project. It identifies the purpose and need for action; project objectives; roles of Air Force, County and other agencies, and authorities regulating various aspects of the project. It also provides a summary of the public involvement process for the project.

Chapter 2 describes the Proposed Action and decisions to be made and the alternatives selection criteria for the project. It also presents a range of reasonable project alternatives that address the stated purpose and need and identifies and explains why alternatives were considered but not

carried forward for detailed analysis. This chapter also identifies the Air Force's preferred alternative.

Chapter 3 describes the affected environment (existing conditions) for various environmental components in the Proposed Action and provides a comprehensive analysis and assessment of the direct and indirect environmental consequences and impacts of the Proposed Action and NEPA alternatives.

Chapter 4 provides analysis of CEQA alternatives, a comparison of the differences in impacts among the project alternatives, and identification of the environmentally superior alternative.

Chapter 5 provides a discussion of the consequences of project implementation and other NEPA and CEQA statutory requirements, including environmental effects found to be less than significant, significant environmental effects that cannot be avoided, irreversible impacts of project implementation, significant cumulative impacts and growth inducement.

Chapter 6 includes a list of organizations and persons consulted on the Draft EIS/EIR.

Chapter 7 includes the responses to comments on the Draft EIS/EIR.

Chapter 8 includes list of acronyms and abbreviations used in the Draft EIS/EIR.

Chapter 9 includes a list of the preparers of the Draft EIS/EIR.

Chapter 10 provides a list of references used in the Draft EIS/EIR.

Chapter 11 provides an index of terms used in the Draft EIS/EIR.

Appendices

CHAPTER 2
Proposed Action, Project Description, and Alternatives

2.1 Introduction

This EIS/EIR chapter provides a description of the construction, operation, and maintenance of a solar photovoltaic (PV) renewable energy project (proposed project, or Proposed Action) at Edwards Air Force Base (AFB) and those supporting actions the U.S. Air Force (USAF, or Air Force) and County would undertake to implement the Proposed Action. This chapter also provides a description of alternatives that meet Air Force and County requirements for the Proposed Action and sets forth by the selection standards that were used to evaluate and develop reasonable alternatives. Alternatives that were considered but did not meet the selection standards are included but are eliminated from further evaluation.

2.2 Description of the Proposed Action

The Air Force Proposed Action is to lease land to a developer for the construction, operation, and maintenance of the Edwards AFB Solar Project a solar PV renewable energy project and associated 230-kilovolt (kV) generation-tie (gen-tie) line (i.e., the proposed project or Proposed Action) at Edwards AFB. The final scale of the Proposed Action is anticipated to be up to 750 megawatts (MW), with the generated energy distributed to investor-owned utilities, municipalities and other energy off-takers. The construction scale of such a proposed project would require a lease and development of up to 4,000 acres of non-excess land at Edwards AFB. It should be noted that the study area evaluated in this Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) included 5,800 acres. Through the siting and initial design process, the Air Force was able to minimize impacts to environmentally sensitive areas.

The Proposed Action would occur in three phases. Phase one actions would include the construction of renewable energy solar arrays and electrical interconnection lines and the infrastructure necessary to connect to the grid. Once these are constructed and installed, phase two actions would include the operation and maintenance of Proposed Action facilities. The third and final phase would occur at the expiration of the lease term, which is projected to reasonably expire at the end of the useful life of the proposed project infrastructure, not to exceed 35 years. At the end of its useful life, the solar facility on the leased Air Force land would be decommissioned and the land returned to the Air Force for another land use. Detailed provisions concerning the construction, operation, maintenance, and generalized decommissioning actions of the solar PV system, including environmental management and mitigation measures, would be addressed in the lease agreement. The proposed lease, once implemented, would be in place through all project phases

and the elements of environmental management, mitigation, and best management practices would occur during project phases, as appropriate. Any significant or major changes in the project activities analyzed in this EIS/EIR may require additional National Environmental Policy Act (NEPA) considerations, including supplemental environmental analysis under the Air Force's Environmental Impact Analysis Process (EIAP) and California Environmental Quality Act (CEQA) regulations.

A Franchise Agreement with the County would be required to use County franchise rights for routing of a 230 kV gen-tie line from the proposed solar facility to a point of interconnection where power generated by the project can be delivered to the grid. Points of interconnection may include the Southern California Edison (SCE) Windhub Substation and/or the privately owned Westwind Substation. The gen-tie line would allow electricity generated from the project to reach high-voltage transmission lines that would be able to carry power to utility customers. The proposed 230 kV gen-tie line would run across publicly and privately owned property within Kern County. The final gen-tie route will be determined by the ability to acquire access easements for construction and installation of the line from public and private entities.

2.3 Environmental Setting

2.3.1 Regional Setting

The proposed solar facility would be located on the northwest corner of Edwards AFB. The project site is located approximately 57 miles southeast of the city of Bakersfield and approximately 7 miles north of the community of Rosamond and 6 miles south of Mojave, in southeastern Kern County, California (see **Figure 2-1**). Kern County is California's third-largest county in land area, encompassing 8,161 square miles. Kern County is bounded by Kings, Tulare, and Inyo Counties on the north, San Bernardino County on the east, Los Angeles and Ventura Counties on the south, and Santa Barbara and San Luis Obispo Counties on the west. Kern County consists of three general areas, or "regions": Valley Region, Mountain Region, and Desert Region. Kern County encompasses over 5 million acres within these diverse geographical regions. The project site is located in the Desert Region. The proposed project is located in the western portion of the Mojave Desert, in the Antelope Valley area. The Mojave Desert is to the south and east of several low mountain ranges and is dominated by desert vegetation. Topography is mostly flat, but elevations gradually rise toward the west and northwest. The Tehachapi Mountains are to the north and west and the San Gabriel Mountains to the south.

The major north–south route in the region is State Route (SR) 14, which is located approximately 1.1 miles west of the project. SR 14 is a four-lane highway that runs north–south between Santa Clarita (Los Angeles County) and Inyokern (Kern County), terminating at U.S. Highway 395. The major east-west route near the project is SR 58, which is located approximately 5 miles north of the project. SR 58 is a four-lane highway that runs between US 101 near Santa Margarita (San Luis Obispo County) and Interstate 15 (I-15) near Barstow (San Bernardino County) and is a primary truck route for long-haul vehicles transporting goods between California and areas in the east.

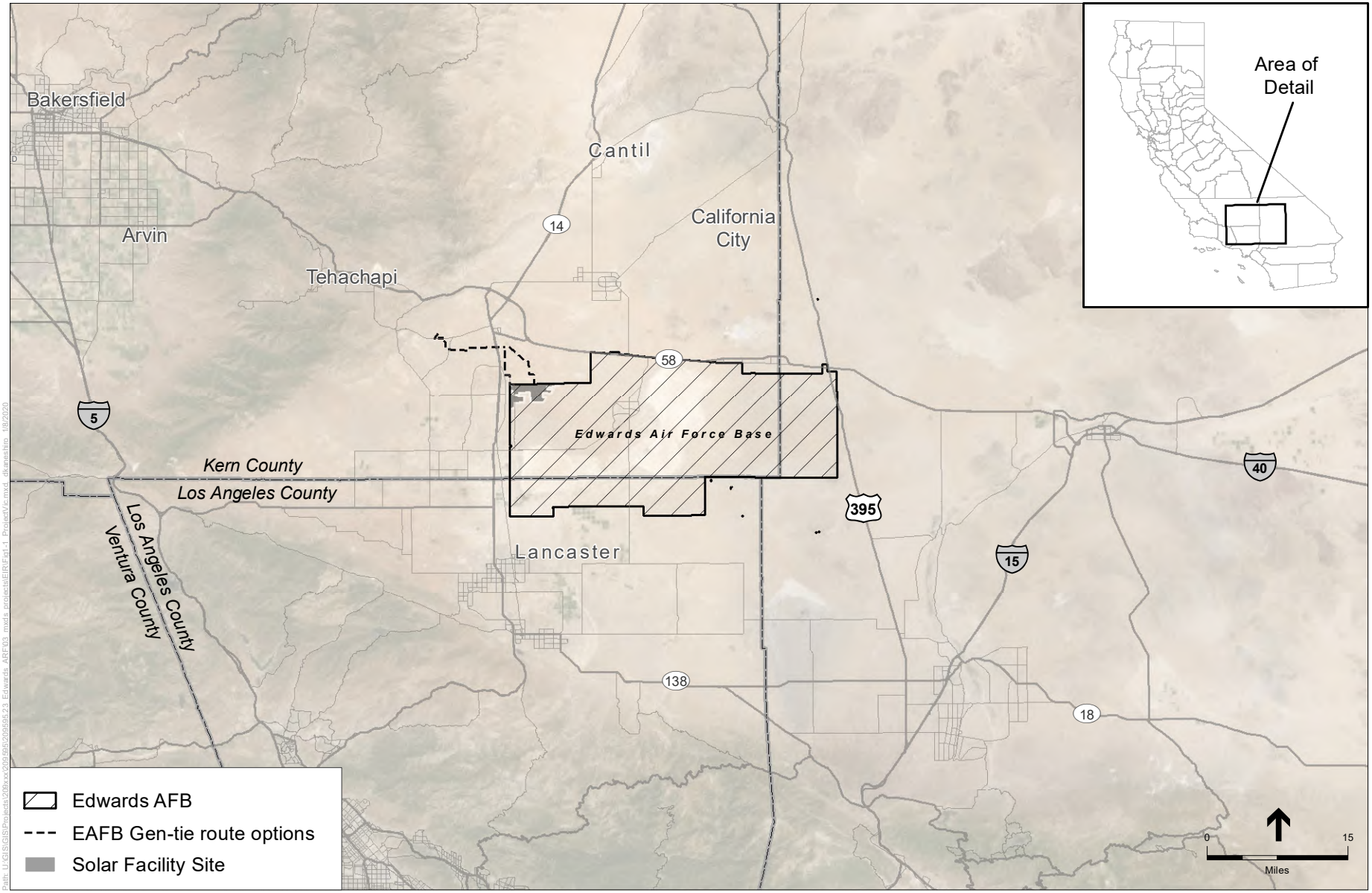

Figure 1-1: PROJECT VICINITY

The unincorporated community of Rosamond is located to the west of the proposed solar facility along SR 14 in the southern end of the Antelope Valley, near the border with Los Angeles County. The unincorporated community of Mojave is located along SR 14, northwest of the proposed project.

Land uses in the region include a mix of vacant land; agriculture; low-density, single-family residential uses; recreational and public facilities; and nature preserves. Urban development is concentrated in Rosamond and Mojave. There are no designated scenic highways, views, vistas, or points within the viewshed of the proposed solar facility site. Renewable energy generation is a significant and growing land use in the desert region, with tens of thousands of acres of wind and solar power plants currently operating, under construction, or planned in the vicinity of the proposed project. The base of the Tehachapi Mountain range is approximately 12 miles to the northwest.

The solar project facility and gen-tie routes would be served by the Kern County Sheriff's Department (KCSD) for law enforcement and public safety. The closest KCSD Sheriff station is the Mojave substation, located at 1771 State Highway 58, approximately 4.5 miles north of the solar facility site. The Kern County Fire Department (KCFD) would provide fire protection and emergency medical and rescue services for the solar facility and gen-tie project areas. The closest KCFD fire station is Station #14 at 1953 State Highway 58, located approximately 5.7 miles north of the solar project site in the community of Mojave, CA.

The closest airport to the project site is the Mojave Airport which is 2.75 miles north of the gen-tie routes and approximately 5-miles from the solar facility site.

The project solar facility site and gen-tie lines are not located within an area that is designated by the California Department of Conservation (CDC) as Prime Farmland, Farmland of Statewide Importance or Unique Farmland. No lands within the solar facility boundary are subject to a Williamson Act Land Use Contract. The Williamson Act of the US state of California (officially, the California Land Conservation Act of 1965) is a California law that provides relief of property tax to owners of farmland and open-space land in exchange for a ten-year agreement that the land will not be developed or otherwise converted to another use.

2.3.2 Local Setting and Surrounding Land Uses

2.3.2.1 Proposed Solar Facility Site

Edwards AFB encompasses approximately 481 square miles. The project site is approximately 1.1 miles east of SR 14 and 0.5 mile east of Sierra Highway. The proposed project lies within an undeveloped portion of Edwards AFB. The site is covered with low-lying desert vegetation and is generally flat (elevations ranging from approximately 2,545 feet above mean sea level (amsl) to approximately 2,480 feet amsl), with a few dirt roads traversing the site. The perimeter of the project site is partially surrounded by a chain-link barbed-wire fence along Lone Butte Road and Trotter Avenue. There are power lines along Division Street, which runs north–south through the western portion of the project site. There are also power lines located along Trotter Avenue, which turns at a slight diagonal to the southeast and through the eastern portion of the project site.

Otherwise, there are no existing structures, paved drives, lighting, or other improvements on the site. There are no natural or man-made water features on the project site. There are ephemeral playas on the project site that are temporarily inundated with water, but these are not considered water features.

As shown in **Figure 2-2 Site Boundaries**, the project site is bounded by Trotter Avenue to the north and Lone Butte Road to the west. The area directly north and west of the project site includes scattered residential uses. The lands abutting the project site to the east and south are undeveloped and are located within the perimeter of Edwards AFB. Vacant land covered with sparse, low-lying desert vegetation characterizes the lands surrounding the rest of the proposed solar facility site. There are currently no active agricultural land uses within or surrounding the proposed solar facility site.

According to the Edwards AFB Installation Development Plan, the proposed solar facility area has a land use designation of Research and Development and a zoning classification of Range Zone. Future uses planned for within the Range Zone include continued development of existing activities as well as development of solar power facilities and other leased uses. The proposed solar facility area is predominantly used for aircraft test ranges and maintained and unmaintained landing sites. **Table 2-1**, Project Site and Surrounding Land Uses, depicts the project site and surrounding land uses.

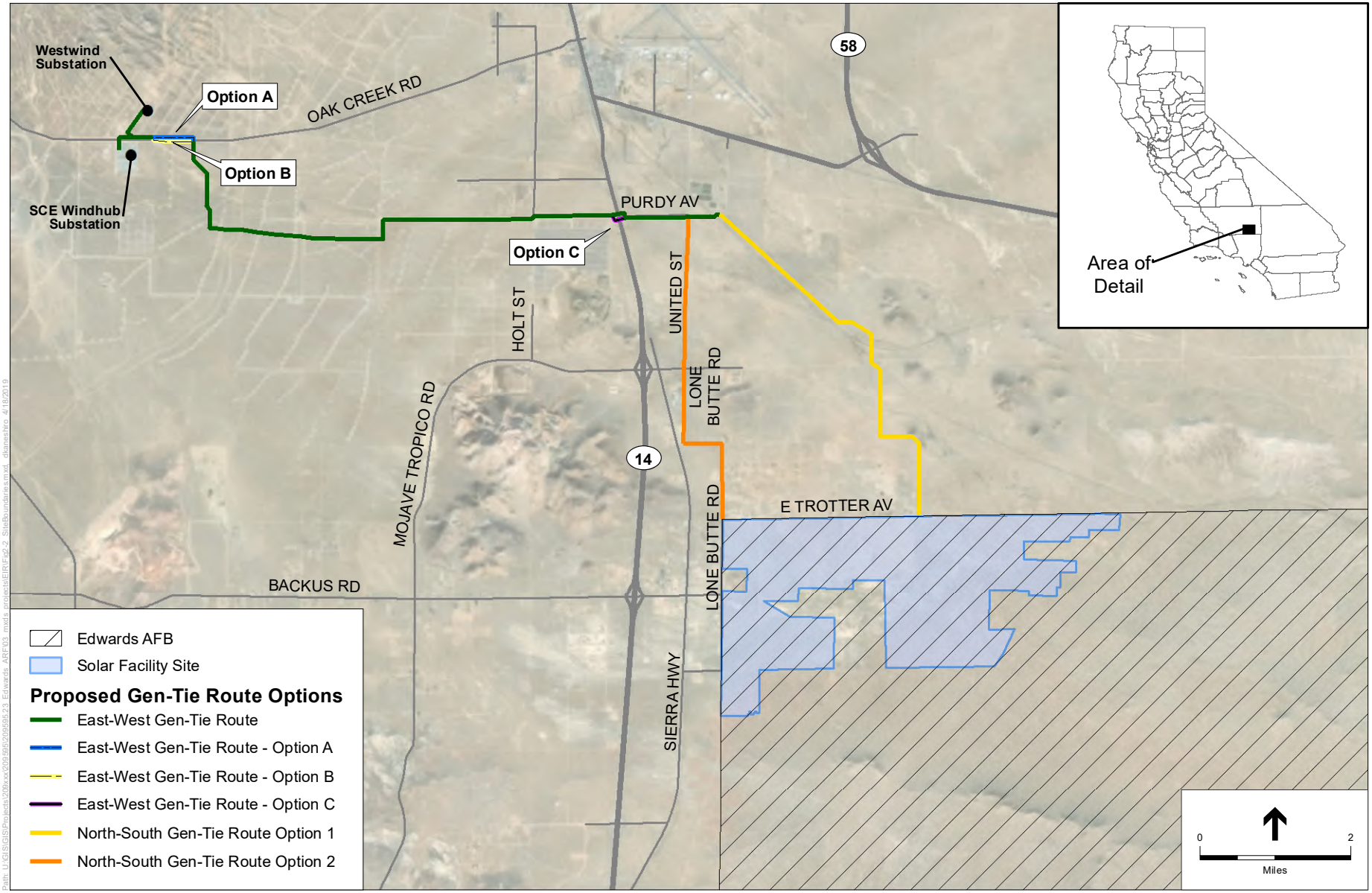

Figure 2-2: SITE BOUNDARIES

TABLE 2-1
PROJECT SITE AND SURROUNDING LAND USES

Direction from Project Site	Existing Land Use	General Plan Land Use Designations	Zoning Designations
Project Site	Vacant Land	Map Code 1.1 (State and Federal Land) - Applied to all property under the ownership and control of the various State and federal agencies operating in Kern County (military, U.S. Forest Service, Bureau of Land Management, Department of Energy, etc.).	Located within Edwards AFB are not subject to Kern County zoning
North	Scattered Single-Family Residences; Vacant Land	Map Code 4.1 (Accepted County Plan Areas [Mojave]) –The Mojave Priority Area Map identifies the lands immediately north of the site as the West Edwards Road Settlement. Map Code 8.5 (Resource Management) -- Primarily open space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints, or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity. Map Code 6.2 (General Commercial) - Retail and service facilities of less intensity than regional centers providing a broad range of goods and services which serve the day-to-day needs of nearby residents. Map Code 5.6 (Residential - Minimum 2.5 Gross Acres/Unit) -This constitutes a single-family designation with rural service needs in the valley and desert regions, while in the mountain region residential uses of this density will require urban service provision. Map Code 5.7 (5.0 Gross Acres/Dwelling Unit Maximum) - Designated in the outlying, less densely settled areas, often characterized with physical constraints and not requiring connections to public water and sewer infrastructure. Map Code 8.5/2.5 (Resource Management/Flood Hazard) – See above for summary of Map Code 8.5. Map Code 2.5 (Flood Hazard) – Special Flood Hazard Areas (Zone A), as identified on the Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA) and supplemented by floodplain delineating maps that have been approved by the Kern County Engineering and Survey Services Department.	Limited Agriculture (A-1) - Designates areas suitable for a combination of estate-type residential development, agricultural uses, and other compatible uses. Final map residential subdivisions are not allowed in the A-1 District.. Estate (E 10) - Designates areas suitable for larger lot residential living environments. Uses are limited to those typical of and compatible with quiet residential neighborhoods. The minimum lot size shall be ten (10) acres. Estate (E 2 1/2); - Designates areas suitable for larger lot residential living environments. Uses are limited to those typical of and compatible with quiet residential neighborhoods. The minimum lot size shall be two and one-half (2 1/2) acres. Residential Suburban (RS) - This combining district expands the number and type of permitted domestic agricultural uses within rural residential areas. The uses allowed and regulations established by the RS District are in addition to regulations of the base district with which the RS District is combined. Mobile Home (MH) - This combining district provides for the installation of mobile homes with or without foundations in agricultural, resource-related, and residential zoned areas. The uses allowed and regulations established by the MH District are normally in addition to the regulations of the base district with which the MH District is combined. General Commercial (C-2) - Designates areas for the widest range of retail commercial activities, including regional shopping centers and heavy commercial uses. The C-2 District may also be combined with the Cluster (CL) Combining District to achieve innovative, creative office or commercial development. Precise Development Combining (PD) - Designates areas with unique site characteristics or environmental conditions or areas surrounded by sensitive land uses to ensure that development in such areas is compatible with such constraints.

TABLE 2-1
PROJECT SITE AND SURROUNDING LAND USES

Direction from Project Site	Existing Land Use	General Plan Land Use Designations	Zoning Designations
West	Scattered Single-Family Residences; Vacant Land	Map Code 4.2 (Interim Rural Community Plan [Actis]) – The Actis Interim Rural Community Plan map designates the area immediately west of the site as Map Code 7.2: Service Industrial.; Map Code 7.2 (Service Industrial) - Commercial or industrial activities which involve outdoor storage or use of heavy equipment. Such uses produce significant air or noise pollution and are visually obtrusive. Uses shall include, but are not limited to, the following: Automobile and truck parking, storage and repair shops, freighting or trucking yards, bottling plants, breweries, welding shops, cleaning plants, and other manufacturing and processing activities. Map Code 8.5 (Resource Management) – See above.	Medium Industrial (M-2) - Designates areas for general manufacturing, processing, and assembly activities. Uses may not produce fumes, odor, dust, smoke, gas, or vibrations extending beyond zoning district boundaries.; Floodplain Primary (FPP) - Protects public health and safety and minimizes property damage by designating areas that are subject to flooding with high velocities or depths and by establishing reasonable restrictions on land use in such areas. Uses in the FPP District are limited to those low intensity uses not involving buildings, structures, and other activities that might adversely affect or be adversely affected by flow of water in the floodway. Precise Development (PD)-See above.
East/South	Edwards Air Force Base, Vacant Land	Map Code 1.1 (State and Federal Land) – See above.	Lands to the east and south of the proposed site are within Edwards AFB, and are not subject to Kern County zoning

2.3.2.2 Proposed Gen-Tie Line Corridor

A 230 kV gen-tie line would connect the Edwards AFB solar generation site with either the existing, privately owned Westwind Substation and/or to the SCE Windhub Substation. The gen-tie line must extend north and west of the solar facility to reach the substations. In general, the gen-tie route can be broken down into two categories based on the direction of the corridor: a north–south connection and an east–west connection. One north–south connection route and one east–west connection route must be selected to implement the project. There are two options for the north–south gen-tie connection. The proposed project would include only one of these north–south connection options. There are two connection options for the east–west gen-tie connection as well as a third variation of the east–west routes. The proposed project would include only one of these east–west connection options. All alignment options are assessed for their potential environmental effects in this EIS/EIR.

North–South Gen-Tie Routes

Figure 2-3, North-South Gen-Tie Route Options, shows the approximate location of each the north–south gen-tie route options; North–South Gen-Tie Route Option 1 is shown in yellow and North–South Gen-Tie Route Option 2 is shown in orange.

These north–south route options include the following:

- **North–South Gen-Tie Route Option 1:** An approximately 5.6-mile-long gen-tie route on the east that generally runs from the Edwards AFB solar generation site north adjacent to 20th Street, west adjacent to East Reed Avenue, north adjacent to 15th Street, then generally follows the north side of the Burlington Northern Santa Fe Railway (BNSF) and finally runs west to the intersection of Purdy Avenue and the BNSF.

- **North–South Gen-tie Route Option 2:** An approximately 4.5-mile-long gen-tie route that generally runs from the northwestern edge of the Edwards AFB solar generation site north on Lone Butte Road, west on West Reed Avenue, and north on United Street, where it intersects with Purdy Avenue.

East–West Gen-Tie Routes

Figure 2-4, East-West Gen-Tie Route Options, shows the approximate location of the east–west gen-tie route, which includes three route options. Options A and B run along Oak Creek Road—the proposed project would include only one of these options for the east-west gen-tie route. Option C provides an alternative crossing location of SR 14.

More specifically, from the intersection of North–South Gen-Tie Option 1 and Purdy Avenue, the east–west gen-tie is approximately 9.8 miles in length and would run west along Purdy Avenue for approximately 4.5 miles and then would run south of Purdy Avenue, but north of Decatur Avenue for approximately 2.5 miles and then turn north back to Purdy Avenue. From Purdy Avenue, the east–west gen-tine line would run north and northwest for approximately 1.1 miles to Oak Creek Road.

Along Oak Creek Road for 0.6 miles, there are two options for the east–west gen-tie route. Option A would run north of Oak Creek Road and Option B would run south of Oak Creek Road. From these two options, the east–west gen-tie route would run 0.4 miles west before splitting to the northwest and/or south to connect to the privately owned Westwind Substation and/or SCE's Windhub Substation.

An additional Option C at the intersection of Purdy Avenue and SR 14 is also proposed. Under Option C, the gen-tie route would cross SR 14 along the south side of Purdy Avenue. Option A and Option B would cross SR 14 along the north side of Purdy Avenue and would continue to run west along Purdy Avenue continuing on the same route.

Table 2-2, Proposed Gen-Tie Route Options, provides a brief description of the two north–south route options and the three east–west route options.

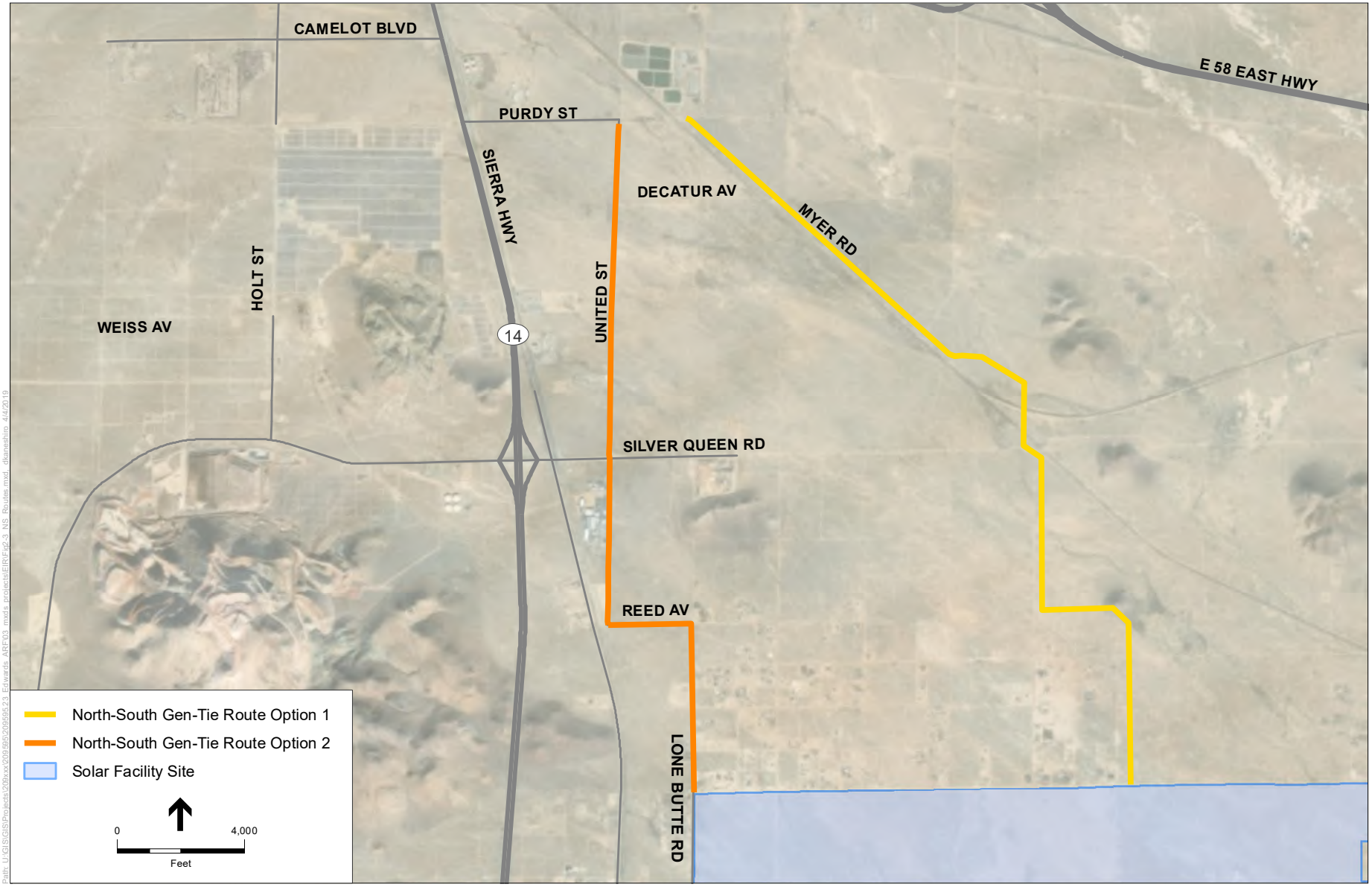

Figure 2-3: NORTH-SOUTH GEN-TIE ROUTE OPTIONS

Figure 2-4: EAST-WEST GEN-TIE ROUTE OPTIONS

TABLE 2-2
PROPOSED GEN-TIE ROUTE OPTIONS

Direction from Solar Site to Substations	Option	Description
North–South	1	5.6-mile-long gen-tie route; runs from the AFB solar generation site north to the intersection of Purdy Avenue and the BNSF.
	2	4.5-mile-long gen-tie route; runs from the northwestern edge of the AFB solar generation site to the intersection of United Street and Purdy Avenue.
East–West	A	9.8-mile-long gen-tie route; runs from the intersection of Purdy Avenue and the BNSF west to the Westwind Substation and the Windhub Substation. Along Oak Creek Road for 0.6 mile there are two options for the east–west gen-tie route—Option A would run north of Oak Creek Road.
	B	9.8-mile-long gen-tie route; runs from the intersection of Purdy Avenue and the BNSF west to the Westwind Substation and the Windhub Substation. Along Oak Creek Road for 0.6 miles, there are two options for the east–west gen-tie route—Option B would run south of Oak Creek Road.
	C	Option C alignment would cross SR 14 along the south side of Purdy Avenue. Options A and B would cross SR 14 along the north side of Purdy Avenue.

2.4 Alternatives Selection Standards

Both CEQA and NEPA require the development and consideration of viable alternatives that meet the Air Force's purpose and need for implementing the Proposed Action. This section outlines the alternative selection standards that were used by the Air Force and County to develop and then analyze the range of reasonable alternatives. Alternative selection standards are grouped into three main categories, including renewable energy technology selection standards, project siting selection standards, and gen-tie route selection standards. These standards were used to help determine feasibility of alternatives and the extent to which project alternatives would fulfill the purpose, need, and project objectives identified in Chapter 1, *Introduction*. The description of reasonable selection standards explains how viable renewable energy technologies for the Proposed Action were determined and further explains why other technology alternatives were eliminated from more detailed study and comparison. Additionally, this section identifies the selection standards that are used to compare reasonable alternative sites for the Proposed Action and further explains why other sites were not deemed reasonable for further detailed study. Finally, this section describes the selection standards used to define reasonable alternative routes for the gen-tie line, which is needed to transport the generated electrical power to the grid for wider distribution and use. A discussion of alternatives considered but not carried forward for analysis follows the discussion of each alternative selection standard category.

2.4.1 Renewable Energy Technology Selection Standards and Alternatives Consideration Process

To be considered a viable renewable energy alternative for Edwards AFB, the proposed technology had to meet the following selection standards:

- Lease Authority Compatibility – The lease shall comply with Title 10 U.S. Code (USC) Section 2667, as amended, to include but not limited to: promoting the national defense or

be in the public interest; real property that is under the control of the Secretary concerned; is not for the time needed for public use; and is not excess property.

- Resource Availability – The renewable energy resource (solar, wind, geothermal, etc.) must be present on Edwards AFB, and must be capable of efficiently generating sufficient renewable energy at rates at or below current market energy rates when factoring in renewable energy tax credits and subsidies. If a renewable energy resource is not present in sufficient quantity, then the technology was not carried forward for further analysis.
- Mission Compatibility – To be carried forward as a viable alternative for analysis, the proposed renewable energy technology must be compatible with flight testing and other military missions occurring on Edwards AFB. Also, the Proposed Action must not interfere with the operations of other military bases in the region. A renewable energy technology that is inconsistent with Air Force or other military service operations is not considered a reasonable alternative.
- Cost Feasibility and Commercial Viability – The Proposed Action must be economically viable for a developer, the utility off-taker, and the Air Force in order to achieve lease consideration for the fair market leasehold interest. The Proposed Action must be consistent with generally accepted commercial and/or utility renewable energy requirements. The Proposed Action must be mature and financeable at reasonable market rates.
- Water Consumption – The technology requirements for water usage must not contribute to depleting or negatively affect necessary potable water resources that support and sustain Edwards AFB's mission and operations. Further, the technology similarly must not require disproportionate water usage that could deplete and negatively reduce available local or regional potable water resources.

2.4.1.1 Alternative Technology Consideration Process

The Air Force considered a range of renewable energy technologies for the proposed renewable energy Enhanced Use Lease (EUL) and for this EIAP. The first phase of alternatives consideration included an analysis by the Headquarters Department of the Air Force. As part of the alternatives consideration process, the Air Force considered a wide array of proven renewable energy technologies and their energy generation potentials (AFRPA, 2007). After reviewing information on the potential methods and technologies available for renewable energy production, resources needed to support the technology, market demand, technology costs, and the available Air Force non-excess land, the Air Force determined that Edwards AFB had considerable potential to develop or allow development of solar energy technology (AFRPA, 2007). Solar technology was determined to be a rapidly improving technology capable of generating energy at utility-scale and at commercially competitive rates. Additionally, the technology could be developed without conflicting with the military and commercial mission at Edwards AFB. Edwards AFB, located in the Mojave Desert region in eastern California, is in an area of California with some of the highest solar energy radiation levels in the United States (**Figure 2-5:** Solar Energy Generation Potential; National Renewable Energy Lab, 2012). For these reasons, solar technologies were determined to be the most feasible opportunity for a renewable energy development EUL at Edwards AFB (AFRPA, 2007).

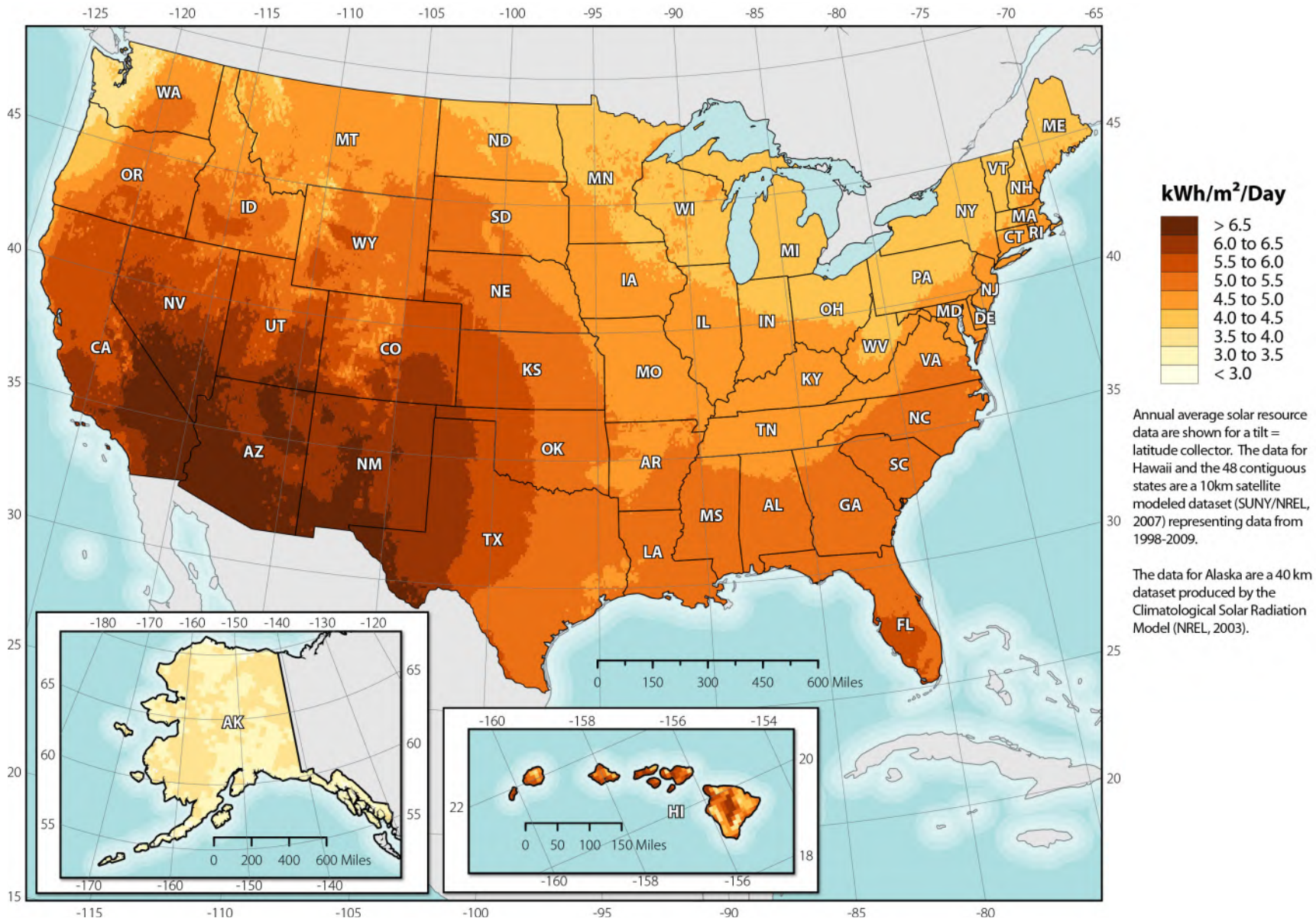

Figure 2-5: SOLAR ENERGY GENERATION POTENTIAL

In 2010, on behalf of the Air Force, the Pacific Northwest National Lab (PNNL) completed an assessment that validated the viability of large-scale renewable energy development technologies and opportunities on Air Force real property. The results of this analysis confirmed that solar energy technologies could support utility-scale renewable energy development proposals at Edwards AFB, whereas other technologies were not feasible (PNNL, 2010).

2.4.1.2 Alternative Technologies Considered but Dismissed

The solar photovoltaic technology was selected due to its compatibility with Air Force missions, commercial viability, and reduced environmental impacts as compared to other alternative technologies. The following alternative technologies were considered but dismissed:

1) **Wind Energy Technologies –** Mission compatibility analysis determined that the Air Force Test Center (AFTC), National Aeronautics and Space Administration's (NASA's) Armstrong Flight Research Center Research Center, commercial aircraft testing operations, and United States Marine Corps (USMC) operation elements could be compromised by utility-scale wind energy development at Edwards AFB. Each of these mission elements requires both ground-to-air and air-to-ground radar and communications. Tehachapi Pass wind development created adverse radar interactions for test flights and impacted the base's mission. In addition to the radar impacts, any development that interfered with or used bandwidth or "spectrum" could make it more difficult for AFTC to evaluate communication technologies in a "sterile" environment. Furthermore, results of a PNNL study concluded that wind would not be sufficient to support commercial, utility-scale energy project development (PNNL, 2010). Typically, sustained class 4 winds moving at 7 to 7.5 meters per second are required for large-scale wind project development. The 2010 report found that Edwards AFB typically experiences class 2 and 3 winds of 5.6 to 7 meters per second, which would not be sufficient to support utility-scale energy generation. Because wind technologies did not meet alternative selection standards for mission compatibility and resource availability, wind energy was not carried forward as a viable alternative for analysis.

2) **Development of Geothermal Renewable Energy Technology –** Geothermal energy is energy produced by harnessing heat energy from below the earth's surface. Heat produced deep within the earth's interior is conducted through the earth toward the surface, producing a geothermal temperature gradient. The geothermal gradient varies significantly across the earth's surface because of variations in the thickness of the earth's crust, thermal conductivity of various rock types, upwelling of volcanic or igneous rocks, and circulation of groundwater.

   In some areas with high geothermal gradients, the thermal energy contained below the surface can be harnessed by geothermal power plants to produce electricity.

   Availability of geothermal resources on Edwards AFB that have the potential to generate cost-effective renewable energy has not been verified and studies necessary to confirm such availability are very costly. To be commercially viable, geothermal development requires an area with subsurface temperatures that reach a minimum of 100 degrees Celsius at a depth of 3,000 meters and also have heat flow rates greater than 80 milliwatts per square meter. Edwards AFB is estimated to have subsurface temperatures of 95 degrees Celsius at a depth of 3,000 meters and heat flow rates of 65–75 milliwatts per square meter (PNNL, 2010). These estimates are below the thresholds needed to support a viable commercial renewable energy development.

Under applicable statutory authority, value could be derived from the energy produced; however, that value seems both low and uncertain given the current state of knowledge as to geothermal energy at Edwards AFB. Therefore, this alternative has not been carried forward for further analysis.

3) **Development of a Biomass or Waste-to-Energy Technology –** Edwards AFB has limited access to materials locally that could be used to support a biomass or waste-to-energy plant. It would not be cost effective or commercially viable to transport this material to make a large-scale plant viable (PNNL, 2010). Because these technologies do not meet alternative selection criteria for resource availability and commercial viability at Edwards AFB, these technologies were not carried forward for further analysis.

4) **Development of Concentrating Solar Thermal Technologies –** Among the available technologies, solar thermal technologies were determined to be a commercially viable renewable energy resource at Edwards AFB. Solar power technologies such as the parabolic trough, solar power tower, and compact linear Fresnel reflector concentrate the sun's energy to produce heat by using mirrors or lenses to focus a large area of sunlight onto a receiver filled with a heat transfer fluid (typically a mix of synthetic organic oils). The solar-heated fluid (at more than 300 degrees Celsius) flows through a heat exchanger, where its heat is transferred to water, producing steam and driving a generator. Concentrating solar systems consume large volumes of water during the operation of the system. Closed-loop concentrating solar systems can capture the steam produced and reuse it. The closed-loop technology uses significantly less water than the traditional open system, but does not generate electricity as efficiently as an open system. Both closed-loop and open concentrating solar systems are not deemed compatible development options at Edwards AFB by the Air Force. The Mojave Desert region of California has extremely low levels of groundwater recharge, and concentrating solar thermal technologies would not be sustainable developments within this region and setting. Solar thermal technology may also have greater impacts to military flight and training activities as a result of glint and glare. This alternative technology has therefore not been carried forward for further analysis.

2.4.2 Proposed Action Site Selection Standards and Alternatives Consideration Process

To be considered a viable renewable energy siting alternative for the Proposed Action, the technology had to meet all of the following selection criteria.

- Land Availability – The renewable energy site considered must comprise at least 1,500 acres of contiguous, non-excess Air Force real property capable of supporting a utility-scale (greater than 100 MW) energy project. This is required to meet the project's purpose and need, which includes optimizing the value of Air Force real property by leasing land through the EUL program.
- 10 USC 2667 Compliant Property – To be carried forward as a viable site for analysis, the renewable energy site must be under the exclusive control of the Secretary of the Air Force and must not be needed for public use. The property cannot be excess property, as defined by 40 USC 102.
- Mission Compatibility – To be carried forward as a viable alternative for analysis, the renewable energy site and technologies considered must be compatible with flight testing and other military and commercial missions occurring on Edwards AFB. The Proposed Action must also not interfere with the operations of other bases in the region. Renewable

energy proposals at sites on Edwards AFB that impact execution of Air Force or other military service operations are not considered viable alternatives.

- Force Protection Compatibility – To be carried forward as a viable alternative, the renewable energy site considered must not compromise base operations or the ability to implement force protection measures and base security. Viable renewable energy sites must be located on the perimeter of the installation or in other contained areas, where a developer and base can monitor and validate the credentials of employees during the development and operation of the solar facility.
- Grid Access, Proximity to Interconnection – Alternative sites considered must be within 16 miles of a viable interconnection point to allow the Proposed Action access to high-voltage transmission lines with the capacity to carry renewable energy generated by the project to customers in need of electricity. Construction of aboveground transmission typically can exceed $1 million per mile when all construction and mitigation costs associated with transmission lines are considered. Gen-tie length of more than 16 miles would jeopardize the economic and technical feasibility of the EUL project. The grid infrastructure must be capable of transporting or being cost-effectively upgraded to transport electricity generated by the proposed project. Two interconnection points have been identified as viable locations for connection of the gen-tie to the grid. These locations include the SCE Windhub Substation and the privately owned Westwind Substation.
- Site Accessibility – Sites must be accessible for workers and equipment to support construction of the renewable energy facility. The renewable energy facility must be within a couple of miles of existing unimproved or paved roads to ensure the development team can proceed with constructing and operating the facility. The site must have the ability for trucks to bring heavy equipment, supplies, water, and project materials to the site.
- Physical Compatibility of the Site with Solar PV Development – Topography and slope of the proposed siting location must support the proposed project. Topography should consist of land that is generally flat and of less than 2 percent grade. The site must provide for good southern exposure to capture the sun's energy without topography that causes sun blockage or shading, and the site must physically support construction of the project.
- Desert Tortoise Critical Habitat – Renewable energy sites on Edwards AFB consist of land that is not designated as federally listed desert tortoise critical habitat, as designated by the U.S. Fish and Wildlife Service (USFWS). The Air Force recognizes that the rapid pace of development in and around these areas has impacted areas set aside by the USFWS for desert tortoise conservation. As designated by USFWS and included in the Integrated Natural Resources Management Plan, a portion of the eastern side of Edwards AFB is critical recovery habitat. This area would therefore not be considered for EUL project development.

2.4.2.1 Site Evaluation Process

The Air Force has considered a broad range of alternatives before arriving at the site considered for the Proposed Action. The first phase of alternatives consideration included an analysis directed by the Headquarters Department of the Air Force. Initial analysis in 2007 identified three different areas on Edwards AFB on the perimeter of the installation that could potentially support a renewable energy EUL project. Following the initial identification of these sites, Air Force and Edwards AFB staff further evaluated lands that could support the Proposed Action.

Edwards AFB staff developed a geographic information system (GIS)-based model of the entire base and incorporated numerous data layers for land use and air space restrictions, aspect, and other environmental constraints. The model was run to define potentially compatible solar PV development acreage within the confines of the 308,000-acre base.

2.4.2.2 Alternative Sites Considered but Dismissed

1) **Sites on the eastern side of Edwards AFB –** Sites on the eastern perimeter of the installation were ultimately excluded from further analysis to avoid siting of the facility in an area designated as desert tortoise critical habitat. The Air Force determined that it would not site the Proposed Action exclusively in desert tortoise critical habitat, given the large size of the project and potentially negative impacts on the federally-listed species. These sites are also not carried forward as the length of the gen-tie required to reach interconnection points could also not be economically supported by the Proposed Action. Potential EUL sites on the eastern side of Edwards AFB are therefore not carried forward for further environmental analysis.

2) **Centrally located sites inside the perimeter of Edwards AFB –** Force protection compatibility of the EUL and base security are key concerns with EUL project siting at Edwards AFB. Locating the project centrally within Edwards AFB, as opposed to on the perimeter of the installation, would present challenges both for force protection and mission compatibility. During construction and operation of the facility, it would be difficult for Edwards AFB to monitor activities of contractors. Additionally, any facility sited centrally within Edwards AFB's perimeter would likely include aboveground electrical transmission infrastructure that crosses or interferes with access and use of Air Force or joint service training areas. These sites are also not carried forward because the length of the gen-tie required to reach interconnection points could also not be economically supported by the Proposed Action. For these reasons, sites located centrally, within the perimeter of Edwards AFB, are not carried forward for further analysis.

3) **Sites more than 16 miles from grid interconnection –** All potentially compatible Proposed Action sites identified, other than those sites in the northwestern corner of the installation, would require a minimum of eight additional miles of gen-tie line to allow electricity generated from the Proposed Action to reach potential grid interconnection locations. At over $1 million per mile, electrical tie-in costs for the gen-tie would be economically unfeasible for the Proposed Action to support. Potential sites located in the southwestern corner of the installation, and sites in the north central perimeter of the installation, were eliminated from further analysis because they are not within 16 miles of the proposed electrical interconnection points. Additionally, other sites were not carried forward for analysis as the sites conflict with the installation's training mission. This site, in the southwest corner of the installation, is located underneath a route designated as the Alpha corridor, a supersonic flight corridor needed to support installation mission activities.

4) **Non-contiguous sites less than 1,500 acres –** Construction and operation of the facility across multiple, unconnected, smaller footprints on Edwards AFB would require more access roads and support infrastructure, would increase system maintenance and interconnection costs, and would not allow the project to be conducted in a cost-feasible manner. Construction, interconnection, operation, and maintenance costs for the project would all increase. Additionally, several smaller parcels of land would present the Air Force with a higher risk of mission conflicts in the future, as opposed to one siting location for the EUL project. This alternative would require additional electrical transmission from

multiple sites, as opposed to one, and this would also decrease cost feasibility and increase impacts associated with the gen-tie/electrical transmission construction. For these reasons, the consideration of project siting on multiple small, noncontiguous sites on Edwards AFB is not being carried forward for further analysis.

5) **On-base roof-mounted and infill PV siting –** This alternative would include the use of parking lots, rooftops, decommissioned facilities, and sites of previously demolished buildings as locations for siting the EUL project's solar panels. Constructing the EUL in such a manner, while maximizing use of that land, could not be accomplished in a cost-feasible manner. This alternative would require additional electrical transmission and interconnection to consolidate energy produced from multiple distributed sites to deliver it off-base. This alternative would also require that rooftops of some outdated facilities be reinforced to support solar panels, and would require approximately 25 miles of gen-tie line connection to deliver electricity off-post. All of these considerations would add millions of dollars to Proposed Action development costs, and would not be commercially viable to implement for this project. Additionally, most of the facilities discussed as part of this alternative are centrally located on the installation, and construction would present potential mission conflicts and force protection issues to accomplish the EUL at the desired scale. This alternative would also not provide the Air Force with a mechanism to generate lease consideration to support facility and energy efficiency improvements. While roof-mounted and infill PV siting of smaller-scale projects would be viable, this alternative would not be viable for a large-scale EUL project. For these reasons, the alternative for siting the EUL on rooftops and on other disturbed sites has not been carried forward as part of this Proposed Action. It should be noted that off-base roof-mounted solar within Kern County is further discussed in Section 2.5.4, *Alternative D: No Ground-Mounted Utility-Solar Development – Distributed Commercial and Industrial Rooftop Solar Only*, and in Chapter 4, *CEQA Alternatives*.

6) **Sites located off of Edwards AFB –** Sites that are not owned by Edwards AFB were not carried forward for further consideration. These sites would fundamentally not meet the purpose and need for the Proposed Action as they would not provide the Air Force with the opportunity to optimize the value and use of its lands through the EUL program. These sites would not be on property under control of the Secretary of the Air Force and would not allow the Air Force to make progress toward its energy goals or the project objectives discussed in Chapter 1.

The only site on Edwards AFB that meets all alternative selection criteria is the EUL site located in the northwestern corner of the installation, shown in **Figure 2-6: Viable Proposed Action Siting Area on Edwards AFB**. This site consists of approximately 5,800 contiguous acres, does not conflict with current base missions, and is on the perimeter of the installation, which would better support Edwards AFB force protection requirements. Additionally, this site is less than 16 miles from potential grid interconnection points, which would allow the Proposed Action to be developed at feasible cost. The physical characteristics of the site are also conducive to site development.

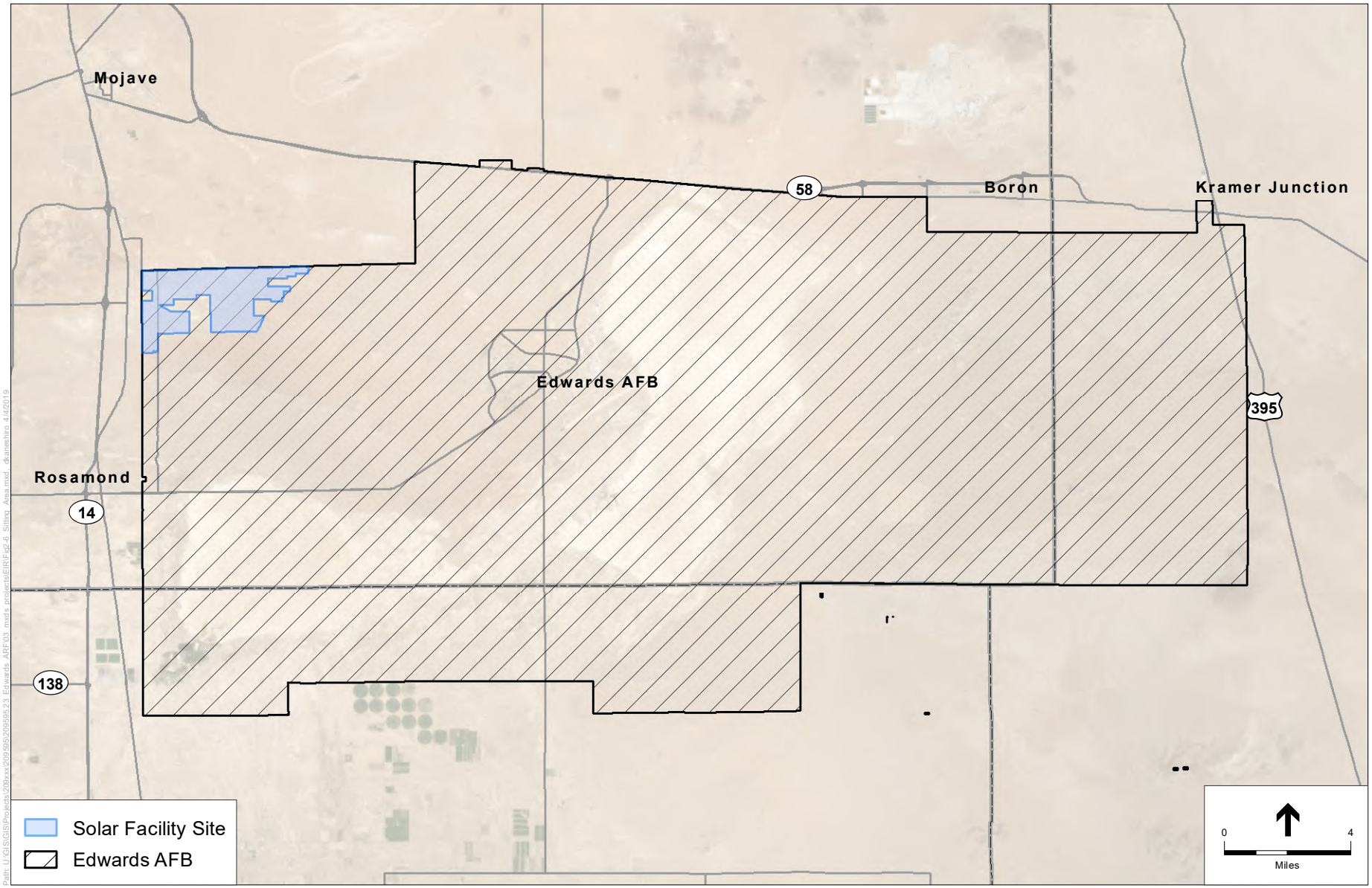

Figure 2-6: VIABLE PROPOSED ACTION SITING AREA ON EDWARDS AFB

2.4.3 Gen-Tie Route Selection Criteria and Alternatives Consideration Process

To be considered a viable gen-tie route alternative for the Proposed Action, the route selected must meet the following selection criteria.

- Route Distance – Gen-tie routes considered as viable alternatives must provide a direct route with minimal deviations from the project site to viable interconnection points. Viable interconnection points identified include the SCE Windhub Substation and/or the privately owned Westwind Substation. The gen-tie must not exceed 16 miles in total length to ensure cost viability of the proposed project.
- Maximize Use of Existing County Rights-of-Way (ROWs) – Gen-tie routes considered as viable alternatives would maximize the use of existing County ROWs to the greatest extent practicable to minimize impacts and potential conflicts associated with the project. Maximizing the use of existing ROWs would help ensure the gen-tie route is compatible with existing land use and would limit the number of property owners that could be affected.
- Minimize Amount of Private Land Utilized – Viable gen-tie route options carried forward for analysis include routes that minimize the number of land owners affected by the ROW requirements of the gen-tie to the greatest extent practicable. Additionally, efforts in routing would be made to avoid parcels of land with private ownership or those parcels that have multiple land owners or commercial ownership. Gen-tie routing in such a manner would reduce the number of potentially affected property owners, and would increase the likelihood of successful routing of the gen-tie.
- Maintain Compatibility with Existing Land Use Plans – Viable gen-tie routes would maintain consistent land use with County plans and would not adversely impact County operations and transportation planning.

2.4.3.1 Gen-Tie Route Evaluation Process

Analysis for the gen-tie route focused on linking the proposed project site to SCE's Windhub Substation and/or the privately owned Westwind Substation to the northwest of the solar array site. Based on the alternative selection criteria for the gen-tie line, potential routes have been established that extend from the project site and connect to the interconnection points at SCE's Windhub Substation and/or the privately owned Westwind Substation and are shown in Figures 2-3 and 2-4.

2.4.3.2 Alternative Sites Considered but Dismissed

The preferred gen-tie routes represent the known available, closest, and most direct routes between the project site and the substation. There are several possible alternative routes but they do not meet the criteria of closest and most direct. The County recognizes that within the corridor that is carried forward for analysis, there are dozens of options for routing through and around various land parcels that would be considered during the gen-tie route siting process. Alternatives requiring routes outside of the proposed gen-tie corridor do not meet the alternative selection criteria, however, and are therefore not carried forward for further analysis.

2.5 Alternatives Considered

This section of the EIS/EIR presents a description of the viable alternatives for implementing the Proposed Action that are evaluated in the EIS/EIR by the Air Force and the County that fall within the footprint of potential development identified by the Air Force. The Proposed Action is the development of a utility-scale (greater than 100 MW) energy project on a 4,000-acre EUL. Each alternative meets the minimum selection criteria discussed in Section 2.3.

2.5.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

This alternative includes the construction, operation, and decommissioning of a PV facility of up to 750 MW of energy on up to a maximum of 4,000 acres of undeveloped, non-excess real property on the project site in the northwest corner of Edwards AFB. Alternative A includes two gen-tie line options ranging in total length from approximately 14.3 miles to 15.9 miles, both of which would run in a northwest direction to the privately owned Westwind Substation for the first phase, and the SCE Windhub Substation in subsequent phases. The proposed route options for the gen-tie line are presented in Figures 2-3 and 2-4. Final routing would depend on the ability of a developer to secure access easements from public and private entities. Alternative A is the Air Force's preferred alternative.

It is reasonable to assume that a solar PV facility could be developed on the project site without a need for substantial grading; however, for the purpose of this analysis, it is assumed that the solar array construction would require grading of the project footprint. The solar panels would be installed using either a single-axis tracking system, whereby the panels are controlled to move with the sun, or a fixed-tilt system, whereby the panels are fixed at a particular angle. There would be site grading, concrete footings, and support beams in order to install the solar array. It is likely that pile foundations would need to be driven to depths of potentially 8 feet deep. Siting of panels would be in a grid-pattern at regular intervals to support maximum energy production and to facilitate ease of maintenance. **Figure 2-7:** Alternative A: Preferred Alternative**,** depicts a conceptual footprint for Alternative A within the EUL Study Area; the precise boundaries may shift depending on topography, cultural resources, and waters of the state. *Section 2.6, Proposed Project Description*, provides additional details regarding how the project would be constructed and operated.

2.5.2 Alternative B: 1,500-Acre EUL

Alternative B includes the construction, operation, and decommissioning of a utility-scale PV solar facility on up to a maximum of 1,500 acres of non-excess real property located within the project site. Alternative B would involve construction using the same technology and components described for Alternative A. This alternative would use the same gen-tie line route options proposed in Alternative A. The reduced project alternative would require less acreage and construction-related ground disturbance required to support the full project alternative described in Alternative A. **Figure 2-8:** Reduced Project Build-Out depicts the proposed site plan of the Alternative B solar facility. .

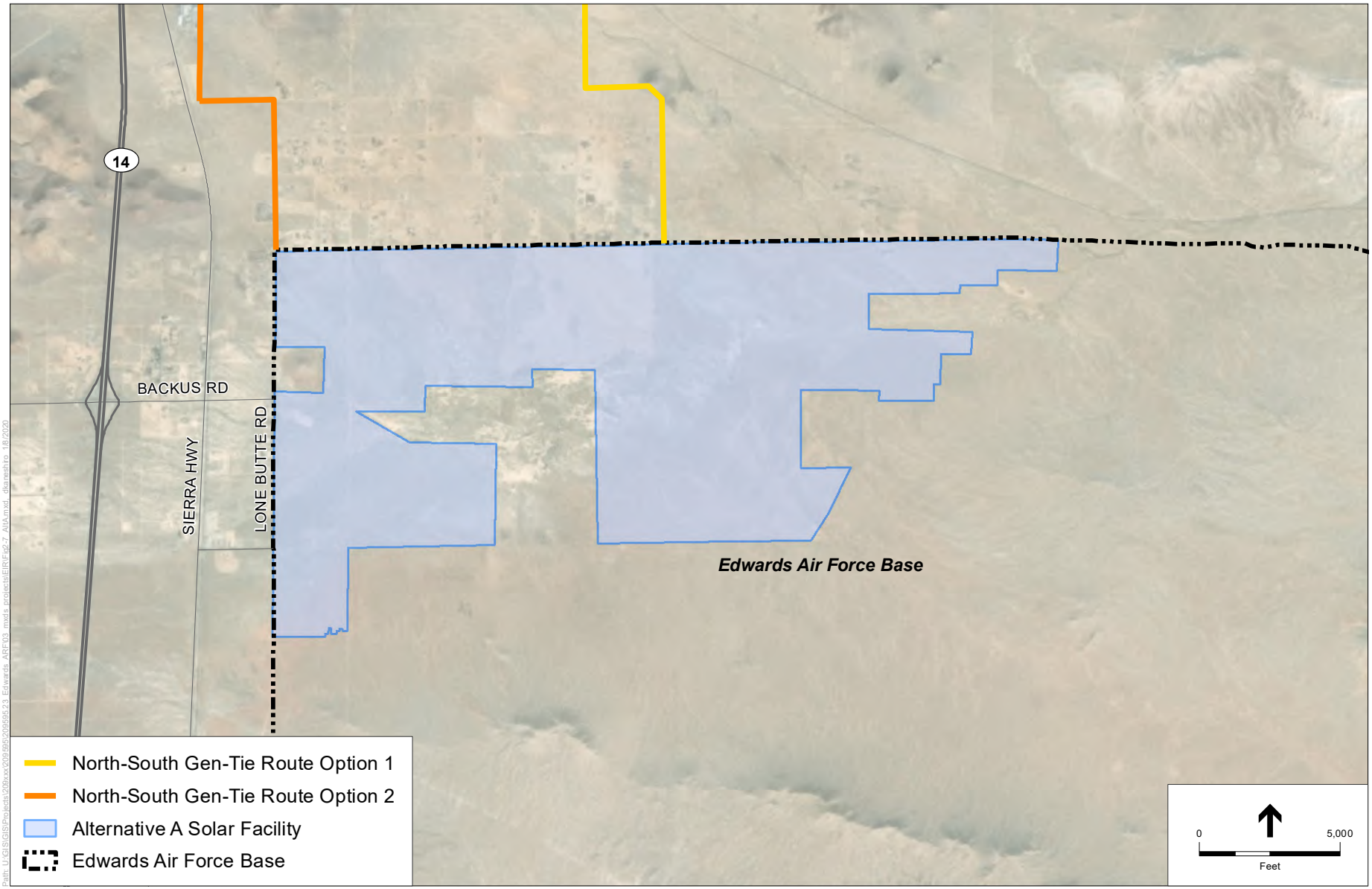

Figure 2-7: ALTERNATIVE A SITE PLAN

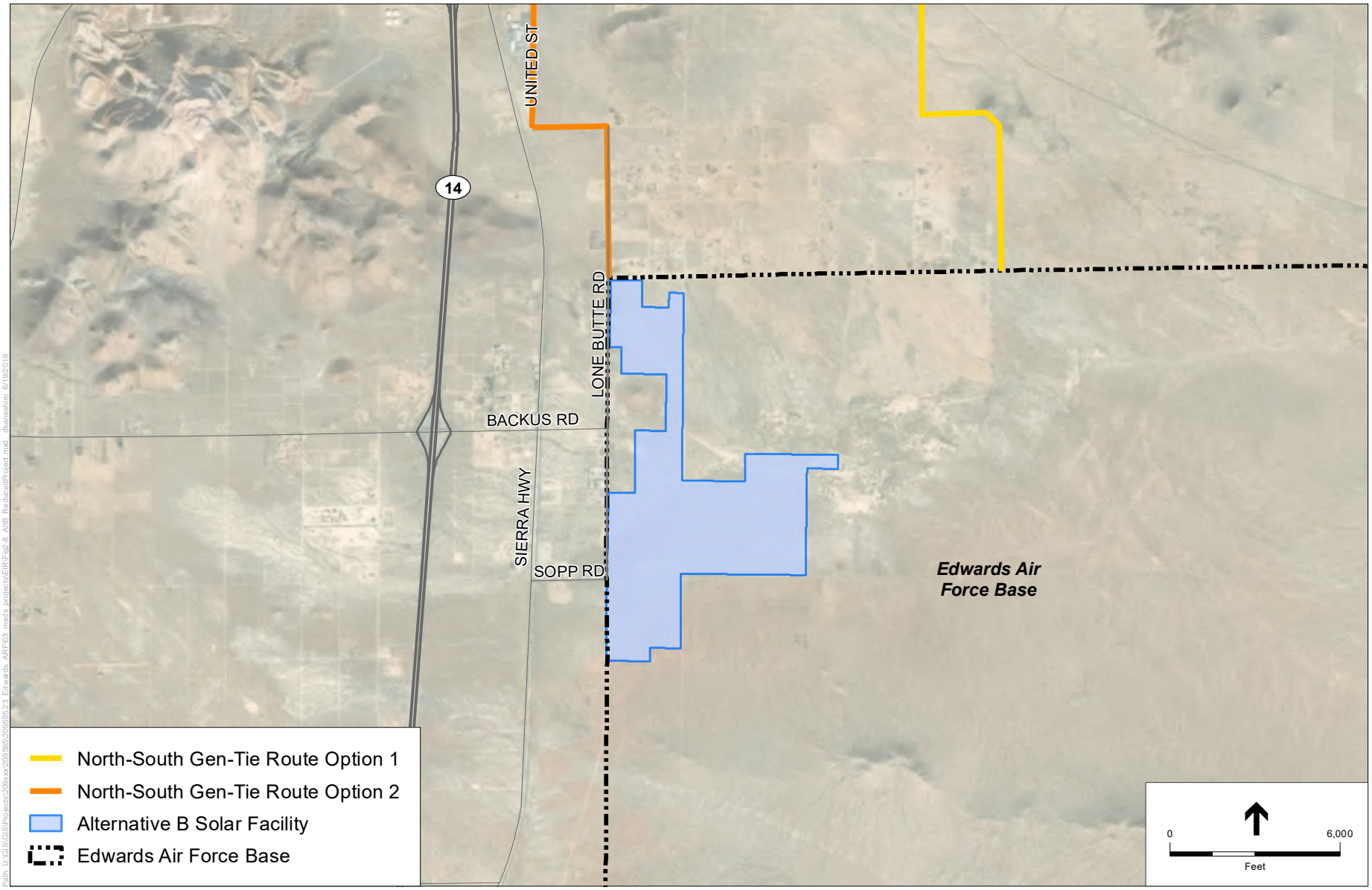

FIGURE 2-8: ALTERNATIVE B REDUCED PROJECT BUILD-OUT

2.5.3 Alternative C: No Action/No Project

Under Alternative C, the proposed EUL action and solar array development would not occur. Base operations at Edwards AFB would continue without the benefit of the EUL or lease consideration. The Air Force would not be able to maximize the use of non-excess lands, make progress toward implementing Air Force energy goals, or move toward implementation of federal facility efficiency and energy mandates. Also, greenhouse gas (GHG) emissions would not be reduced, nor would the Air Force assist the County or State of California in attainment of Renewable Portfolio Standards. This alternative is equivalent to the No Action Alternative under NEPA (32 Code of Federal Regulations Section 989.8 (d)) and the No Project Alternative under CEQA (14 California Code of Regulations Section 15126.6(e)). The No Action/No Project alternative serves as a baseline from which to evaluate environmental impacts of the alternatives under NEPA.

2.5.4 Alternative D: No Ground-Mounted Utility-Solar Development – Distributed Commercial and Industrial Rooftop Solar Only

Alternative D applies only to CEQA. This alternative would involve development of a number of geographically distributed small to medium solar PV systems (100 kilowatts to 1 MW) on the rooftops of existing commercial and industrial facilities throughout Kern County. Depending on the type of solar modules installed and the type of tracking equipment used (if any), a similar or greater amount of acreage may be required to attain the same scale as the proposed project. Because of constraints such as space and shading, many rooftop solar PV systems would not attain the same level of efficiency per acre with respect to ground-mounted utility-scale solar PV generation. This objective would enable the generation of the same amount of electricity as the proposed project, but it would be for onsite use only and would not assist load-serving entities in meeting their Renewable Portfolio Standard goals. Similar to the proposed project, this alternative would be designed to operate year-round using an array of PV modules to convert solar energy directly to electrical power. Power generated by such distributed solar PV systems would be consumed onsite by the commercial or industrial facility without requiring the construction of new electrical substation or transmission facilities.

2.6 Proposed Project Description

The following section describes the project and provides information to enable a greater understanding of the Proposed Action. With the exception of the No Action/No Project Alternative, the project alternatives considered in Section 2.5 each include carrying out the activities discussed in Section 2.6

2.6.1 Structures and Facilities Required

2.6.1.1 Solar Facility

Facility details would vary depending on the final design. The solar facility would consist of solar arrays arranged in a grid pattern that is adapted to the landscape. Solar panels would be placed on

modular piers with associated racking. The typical solar facility consists of the following components, as described in more detail below:

- PV arrays
- Onsite substations/switchyards
- Upgrades required to offsite substations to interconnect the project to the electrical grid
- Permanent services and warehouse buildings
- Multiple laydown areas located throughout the solar facility site
- Installation of an energy storage facility and appurtenances that would provide energy storage capacity for the electric grid
- Associated roads, fencing, and drainage facilities

Solar PV Arrays

An array is an aggregation of PV panels that captures sunlight and converts it directly to generate an electric current (direct current [DC]). If a full 750 MW of energy were to be produced, an estimated two million panels would be installed to implement the Proposed Action.

The panels would be mounted on vibratory pile-driven piers or concrete foundation footings, if piles cannot be driven. The panels would be installed using either a single-axis tracking system, whereby the panels are controlled to move with the sun, or on a fixed-tilt system, whereby the panels are fixed at a particular angle. For either configuration, it is likely that most of the pipe pile foundations would be driven to depths of up to 18 feet. When piles cannot be driven to the required depth, an alternative spread footing detail would be required; these footings may be up to 6 feet wide by 6 feet long and 2 feet deep. The PV panels, at their highest point, would not exceed 12 feet above the ground surface and, at their lowest point, would likely be approximately 30 inches above the ground surface.

On-Base Substations

The solar facility site would include on-base substations. Each substation would step up the generation voltage from 34.5 kV to 230 kV for off-base transmission. Each substation would contain a control building with an attached battery room and standard substation equipment. Each on-base substation would not exceed 1.5 acres in size. Substation equipment would generally be between 15 and 35 feet tall, with the exception of the transmission tower, which would be a maximum of 60 feet in height, and a lightning protection mast, which would not exceed 75 feet in height (transmission tower plus 15 feet).[1] The number of substations will be determined by project phasing, but will not be greater than five.

Energy Storage Facilities

Energy Storage Facilities would either be distributed throughout the facility or centralized adjacent to the onsite substations. The energy storage system is proposed to provide a maximum capacity of 1gigawatt hour (GWh). If distributed, the energy storage batteries would be housed in container

[1] This is a generalized substation description; actual development concepts may vary slightly.

boxes, or trailers located adjacent to inverters throughout the site. If centralized, the energy storage batteries would be housed in a structure, container boxes, or trailers, and would be located on approximately 20 acres of the EUL. The height of the structure, box, or trailer would be approximately 30 feet. The batteries would be housed in racking (similar to computer racking) 10 to 12 feet high, to allow efficient airflow between the batteries. The associated inverters, transformers, and switchgear would be located immediately adjacent to the energy storage facilities on concrete pads outdoors. The energy storage technology has not been determined at this time, but could entail any commercially available battery technology, including but not limited to lithium iron, lead acid, sodium sulfur, and sodium or nickel hydride. Battery systems are operationally silent.

Power Conversion and Fiber Optic Lines

The DC power generated by the PV panels would be delivered along an underground trench system located between each row of PV panels. It is assumed that these trenches would not exceed 3 feet in depth, or approximately 5 feet in width. The DC power for each array would be routed to a 12-foot-wide, 30-foot-long, and 12-foot-tall metal clad electrical enclosure mounted on concrete foundation pads where an inverter and transformer would be located. The inverters within the electrical enclosures convert the DC power to alternating current (AC) and the medium voltage transformers would increase the voltage to 34.5 kV, which is the level required for collection. All electrical equipment would be either outdoor rated or mounted within the electrical enclosures designed specifically for outdoor installation to avoid electrical shock risks to humans and wildlife.

The transformers would be connected in parallel circuits, to deliver AC power along underground trenches to up to three onsite substations. The trenches would be approximately 4 feet deep and up to 5 feet wide (including the trench and disturbed area). These trenches may also contain a fiber optic cable.

The final size of each subarray would be determined during final design. For example, a 2 MW subarray, including the PV panels and associated electrical enclosure, would occupy approximately 10 acres for a fixed-tilt configuration and up to 15 acres for a tracker configuration.

Project Switchyard

The project switchyard is where the voltage from the substations would be combined before being routed via the 230 kV gen-tie line to the privately owned Westwind Substation and the SCE Windhub Substation. The switchyard contains standard switching, metering, and voltage protection equipment. Switchyards require dead-end structures to resist the pulls from phase conductors and shielding wires. These structures would not exceed 80 feet in height. The project switchyard would also require lightning protection masts, which would not exceed 95 feet in height.

Operation and Maintenance Facilities (Service Buildings and Warehouses)

Warehouse and administrative buildings may be constructed to support full-scale operations within the project site. A smaller-scale project would require less overall space. These buildings would include paved parking lots and septic systems.

Site Access Roads

Access to the solar facility would be from Lone Butte Road. In addition, the solar facility would contain an internal, permanent, unpaved roadway system that would include perimeter roads surrounding the facility, as well as a network of roads between subarrays. These roads would provide access for operation and maintenance activities and would consist of existing onsite materials or a blend of existing and imported materials (e.g., gravel) that would be compacted.

Site Security Fencing

To ensure the safety of the public and to maintain site security, the solar facility would be secured with fencing topped with barbed wire that allows for unimpeded drainage and flood flows as well as providing Desert Tortoise access. Access to the solar facility would be controlled, and gates would be installed to provide the required access to the site. The site would also have closed-circuit television that would be monitored from a remote location. The Developer would be responsible for monitoring the site security fencing and closed-circuit television for the project.

Drainage Facilities

Localized grading would be performed throughout the project site to facilitate proper drainage. The drainage facilities have yet to be designed. Earthworks scrapers, paddlewheels, haul vehicles, and graders may all be used to perform localized grading, as needed in areas that require compacted soils (e.g., substation pad site, inverter shelters, roads). Earthwork is not anticipated within the solar arrays where vibratory piles are placed for solar tracking. The project would employ disk-and-roll grading to maintain the general slopes and topography of the site as feasible. Perimeter and access roads may be additionally compacted to 90 percent or greater, as required to support construction and emergency vehicles. The grading would be balanced onsite.

2.6.1.2 Gen-Tie and Telecommunication Lines

Power would be carried from the solar facility to the privately owned Westwind Substation and the SCE Windhub Substation via a 230 kV gen-tie line. One to four circuits and also fiber optic communications lines would be installed. The selected gen-tie line route would be constructed on one set of steel monopoles for the majority of the route, with some H-frame structures as needed. Pole height would likely range between 100 and 180 feet, and would not to exceed 200 feet, except where the gen-tie crosses the LADWP aqueduct, where poles could be up to 215 feet in height, subject to FAA approval. The gen-tie line would travel overhead for the majority of the route but may be installed underground in certain sections where necessary due to physical or commercial constraints. Fiber optic communication cables would run parallel with the gen-tie line. Foundation sizes for the gen-tie poles would be approximately 6 to 12 feet in diameter and 20 to 40 feet deep. The gen-tie poles would be set within the poured concrete foundations or via direct-bury methods.

Where the gen-tie route includes one set of poles, the maximum width of the ROW associated with the gen-tie line would be 120 feet. The width of disturbance includes approximately 50 feet associated with temporary disturbance for access, pulling conductor, and staging materials. The gen-tie line may also share ROWs with existing public and private transmission lines where technically and commercially feasible.

It is estimated that implementation of the Proposed Action would require the installation of approximately 11 poles per mile for the off-base portion of the gen-tie line. All poles would be designed to be avian-safe in accordance with the Avian Power Line Interaction Committee's (APLIC) suggested practices as identified in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC, 2006).

Interconnection Upgrades

Upgrades required to interconnect the proposed solar facility to the transmission grid include installation of new transmission equipment, such as circuit breakers, switches, bus supports, breaker management relays, insulator/hardware assemblies, telecommunications equipment, and spans of conductors between the last Developer-owned structure and the interconnection point.

2.6.2 Construction

2.6.2.1 Workforce and Schedule

The construction worker population would consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. The final count of construction workers that would be required for construction of the solar facility would be determined after the facility layout and capacity is determined. The construction workforce may consist of as many as 100 to 550 daily workers, with approximately 1,250 temporary workers employed during project construction. Construction work would generally occur during daylight hours, Monday through Friday. Non-daylight work hours may be necessary, subject to the Kern County Noise Ordinance Chapter 8.36, to make up schedule deficiencies or to complete critical construction activities, including activities that cannot be completed during daylight. For instance, during hot weather it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Any construction work performed outside of the normal work schedule would be coordinated with the appropriate agencies and would conform to the Kern County Noise Ordinance (Chapter 8.36). It is anticipated that the construction workforce would commute to the site each day from local communities. Construction staff not drawn from the local labor pool would stay in any of the local hotels in Rosamond, Lancaster, or other local cities.

Construction of the Proposed Action is anticipated to last 2 years; however, actual development of the project site is dependent on market conditions upon project approval.

2.6.2.2 Water Supply

It is estimated up to 200 acre-feet per year (AFY) of water may be required during the 2-year construction period to support concrete manufacturing, dust control, and sanitation. To the extent available, tertiary treated water for non-potable uses would be obtained from the Rosamond Community Services District or would be trucked to the site.

2.6.2.3 Solar Facility

Site Preparation

Site preparation would begin by clearing existing vegetation, to the extent necessary, and grading the areas proposed for the main permanent access road to the project site and the permanent pad

sites for inverters. Vegetation clearing and removal operations would be undertaken using mowers, graders, skip loaders, chippers, and dump trucks. Areas proposed for the service buildings and warehouses and their associated parking lots, as well as the proposed switchyard location and onsite substation locations, would also be cleared and graded. These areas would be disked and rolled and compacted; because of the flat topography, the amount of grading to construct these structures is anticipated to be minimal. Initial site preparation activities would also include installation of fencing along the solar facility boundary.

Because of the flat topography of the project site, it is anticipated that minimal grading would be required to prepare the site for PV modules. The PV module piers also allow for installation on uneven ground, reducing the need for grading. To the extent possible, existing topsoil would be left in place. However, it is anticipated that vegetation would need to be removed as a result of trenching and other construction activities.

Temporary Staging and Laydown Areas and Temporary Buildings

Equipment and material staging areas would be established during site preparation. Multiple temporary staging and laydown areas would be located throughout the solar facility to support final assembly and installation. Temporary assembly buildings and construction trailers would be installed onsite to assemble the PV subarrays and for other construction activities, and would likely be located near the warehouse and services buildings.

Temporary holding locations for construction debris and waste would be established near the substation and laydown areas. A local licensed disposal company would be contracted to haul and properly dispose of the refuse. Recyclable items would be staged and disposed of separately, and hazardous materials would be handled in accordance with all laws and regulations.

Solar Array Assembly

Erection of the solar arrays would include support structures and associated electrical equipment. First, steel piles would be driven into the soil using pneumatic techniques, similar to a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. If hallow bedrock, or other obstructions are encountered, the pile locations would be predrilled and then grouted in place with concrete. The piles are typically spaced approximately 10–20 feet apart. Once the piles have been installed, the horizontal array support structures would be installed. The final design of the horizontal array support structures may vary, depending on the final election of the PV technology, as well as whether a fixed tilt or tracking system is selected. Once the support structures are installed, workers would begin to install the solar modules. Solar array assembly and installation would require trenching machines and excavators, compactors, concrete trucks and pumpers, vibrators, forklifts, boom trucks, graders, pile drivers, drilling machines, and cranes. Concrete may be required for portions of the footings, and pads for the medium voltage transformers, inverters, operation and maintenance buildings, battery storage and communications building. Concrete may also be required for pile foundation support depending on the proposed mounting system chosen for installation and whether or not obstructions are encountered when trying to drive piles. Final concrete specifications would be determined during detailed design engineering. Concrete may be produced on the project site and would be poured throughout the sites by truck, or purchased from an offsite supplier and trucked into the project.

During this work, there would be multiple crews working on the site with vehicles, including special vehicles for transporting the modules and other equipment. As the solar arrays are installed, the solar switchyard would be constructed and the electrical collection and communication systems would be installed.

Temporary Power

Temporary power for solar facility construction would be provided by mobile diesel-driven generator sets and/or by temporary electrical service from the local power provider. The diesel generators and construction equipment (backhoes, grader, tractor, etc.) would be registered with the California Air Resources Board (CARB) Portable Equipment Registration Program (PERP) or Diesel Offroad Online Reporting System (DOORS).

2.6.2.4 Gen-Tie Line Construction

Site preparation would include clearing existing vegetation in the proposed pole locations, including their ground lines, trenching locations, access roads, areas for guard structures, and stringing areas. Approximately 150 acres of disturbed and undisturbed lands would be graded or otherwise disturbed for construction of the gen-tie line; however, permanent impacts would be approximately 25 acres. Vegetation in all of these areas, except for the access roads, would be reseeded with a seed stock comprising local, native species. Vegetation in the temporary staging and laydown areas would be trampled but not cleared; these areas would be reseeded as well. Selective vegetation clearing may also be necessary to provide for line clearance.

Foundations for the gen-tie poles would be installed prior to erection of the poles. Pole installation would then occur sequentially along the route to the extent practical. A buried fiber-optic telecommunication line may follow the transmission line route to provide for communication between the project substation and the interconnection to the grid.

For certain sections of the gen-tie route, the gen-tie line may be installed underground with the fiber-optic cables. Installation of underground facilities would require the use of such equipment as trenchers, backhoes, excavators, haul vehicles, compaction equipment, directional drills, and water trucks. Structures for the gen-tie line and conductor support hardware would be assembled at a temporary staging area at each pole location to minimize damage during transport. In addition, areas of disturbance would be required in certain locations along the gen-tie route in order to string the lines. During construction of the gen-tie line across existing roads or structures, temporary guard structures may be installed on either side of the crossing to maintain vertical clearance during construction. Guard structures are installed at locations such as road crossings, flood control facilities, and utility crossings. Guard structures would protect underlying areas during wire-stringing operations. The guard structures intercept the wire should it drop below a conventional stringing height, preventing damage or interference to underlying structures. These guard structures would be temporary and be removed after conductor installation is complete.

Because it is anticipated that the gen-tie line would primarily follow existing roads, main access to the gen-tie route would be via these roads. However, new temporary unpaved access roads may need to be installed to access the laydown areas for each pole and where the gen-tie line is installed underground. They would also be used to access the poles for future maintenance activities. The

maintenance roads would be maintained at a width of 22 feet and be up to 30 feet wide during construction.

Temporary Staging and Laydown Areas

Structures for the gen-tie line and conductor support hardware would be assembled at each pole location to minimize damage during transport. Construction of the gen-tie line would require an approximate area of 50 feet by 50 feet at each pole location, for use as temporary laydown or staging areas for equipment, poles, and hardware. In addition, approximately two laydown/assembly areas are anticipated, which will result in 5 acres of disturbance.

Stringing Areas

In addition to the temporary staging and laydown areas described above, additional areas of disturbance would be required in certain locations along the gen-tie line route in order to string the lines. Specifically, approximately 41 acres of temporary disturbance would occur along the route where there are large angles in the alignment, at all dead-end structures, and at other strategic locations, in order to accommodate equipment required for wire pulling and tensioning in these areas.

Guard Structures

During construction of the gen-tie line across existing roads, temporary guard structures would need to be installed on either side of the crossing to maintain vertical clearance during construction. Guard structures are installed at locations such as road crossings, flood control facilities, and utility crossings. Guard structures would protect underlying areas during wire stringing operations. They intercept wire should it drop below a conventional stringing height, preventing damage or interference to underlying structures. These guard structures would be temporary and would be removed after conductor installation is complete. Each guard structure would disturb an approximately 100-foot by 100-foot area (10,000 square feet).

Roads

Because it is anticipated that the gen-tie line would primarily follow existing roads, main access to the gen-tie route would be via these roads. However, new unpaved access roads would need to be installed to access the laydown areas for each pole, and where the gen-tie line is installed underground. These access roads would be maintained at 22 feet wide and would be up to 30 feet wide during construction. They would also be used to access the poles for future maintenance activities.

2.6.2.5 Design Features and Best Management Practices

Dust Control, Erosion Control, and Water Quality Protection Measures

Construction would commence after a Storm Water Pollution Prevention Plan (SWPPP) incorporating best management practices (BMPs) for runoff and erosion control has been prepared. Site-specific BMPs would be designed by the contractor in compliance with regulations and permit conditions. The Proposed Action would also comply with applicable post-construction water quality requirements adopted by the Regional Water Quality Control Board (RWQCB-Lahontan

Region). Areas disturbed as a result of construction activities would be stabilized to minimize wind and water erosion, and generation of fugitive dust, by watering and/or the use of dust palliatives or tackifiers. Chipped mulch created as a result of selective vegetation removal may also be spread onsite for this purpose as appropriate. No construction would commence until after a Dust Plan and permit to operate from the Eastern Kern Air Pollution Control District (EKAPCD) is approved. The Dust Plan will address Reasonable Available Control Measures for dust control, including limiting work when wind speed is over 20 miles per hour and keeping soil damp while performing earthwork.

Solid Waste Management

Solid waste generated from construction activities may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation wastes. These wastes would be segregated, where practical, for recycling. Non-recyclable wastes would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill. Vegetation wastes generated by site clearing and grubbing would be chipped/mulched and spread onsite or hauled offsite to an appropriate “green” waste facility.

Hazardous Materials and Hazardous Waste Management

The hazardous materials used for construction would be typical of most construction projects of this type. Such materials would include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, and welding materials/supplies. Small quantities of hazardous wastes would likely be generated over the course of construction. These wastes may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Hazardous materials management and hazardous waste management during construction activities would follow the requirements of the Hazardous Materials Management Process (HMMP) and Hazardous Waste Management Plan for Edwards AFB.

2.6.3 Operation and Maintenance

Once placed into service, the solar facility would operate during daylight hours, when there is sufficient sunlight for operation of the solar field.

Maintenance performed on the site would consist of equipment inspection and replacement in accordance with manufacturer recommendations. Maintenance activities would occur primarily during daylight hours. Maintenance activities would also include washing the PV panels, as described in more detail below.

The exact vehicles that would be required for operation and maintenance of the solar facility would be determined after the facility design is finalized. Operation and maintenance vehicles would likely include trucks (pickups, flatbeds, dump trucks), forklifts, and loaders for routine and unscheduled maintenance, and water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the site, as needed, for equipment repair or replacement. A minimal amount of equipment would be stored onsite in equipment enclosures. Construction equipment

(backhoes, grader, tractor, etc.) must be registered with CARB PERP or DOORS. Vehicle fleet must conform to CARB emission standards, including the no-idling rule.

2.6.3.1 Workforce

The total amount of staff required for operation and maintenance is expected to be up to 10 full-time personnel for operation, maintenance, and security of the solar facility. Additional personnel would conduct operations from an offsite location. Additional maintenance and security personnel would be dispatched to the solar facility, as needed.

2.6.3.2 Electrical Supply

The solar facility would require power for the electrical enclosures, substation equipment, tracker motors, service buildings, warehouses, and plant lighting and security. Power for these solar facility auxiliaries would be provided by the solar facility's electrical generation or supplied by the local power provider. Substation protection equipment would be supplied by DC power provided by each substation control building's battery room. There may also be emergency generators located onsite as a backup source; however, such emergency generators may only be needed during construction and could be removed during operation. Emergency backup generators will need a permit to operate with EKAPCD if not removed within 12 months.

2.6.3.3 Lighting

The lighting system for the solar facility would provide operation and maintenance personnel with illumination for both normal and emergency conditions. Lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting would be directed downward and shielded to focus illumination on the desired areas only. Lighting would be provided at the electrical enclosures, onsite buildings, and the main access road entrance. Lighting would be limited so that light spillover on the adjacent properties would be minimal. If lighting at individual solar panels or other equipment is needed for night maintenance, portable lighting would be used.

2.6.3.4 Water Use

Water for operation of the solar facility would consist primarily of water consumed by panel washing processes and small quantities used for dust mitigation. Water is anticipated to be trucked to the project site for operations, with 30 AFY provided by Mojave Public Utility District. The Developer would be responsible for purchasing and providing water for the project.

Operation of the project would use up to 30 AFY of water. It is assumed that panel washing would require approximately 1 gallon of water per panel, and that each panel would need to be washed up to four times per year to maintain solar panel operating efficiency, resulting in a demand of approximately 25 AFY. Operational decisions regarding panel washing would be made based upon real-time conditions and there may be years in which no washing is required. Depending on the amount of building square feet (that would be relative to the size of the solar facility), up to 5 AFY of water may be needed annually to supply water to service buildings and warehouses for showers, bathrooms, and drinking water for onsite employees.

2.6.3.5 Wastewater Generation

Wastewater generated would include sanitary waste handled via onsite septic systems, stormwater runoff, and panel washdown water. Sanitary waste would be handled via onsite septic systems for the services buildings and warehouses. Stormwater runoff would be collected via an onsite drainage system that has not yet been designed. Finally, panel washdown water would be discharged to grade.

2.6.3.6 Fire Protection

The project would comply with all Kern County Fire Code requirements. The PV panels and ancillary equipment represent a negligible increase in fire potential. For the offsite gen-tie line, clearances for vegetation would be implemented in accordance with California Public Utility Code General Order 95 (Rules for Overhead Electric Line Construction).

2.6.3.7 Solid Waste Management

Operation of the solar facility would produce a small amount of nonhazardous solid waste. This would include refuse generated by workers and office operations such as rags, scrap metal, packing materials from deliveries, and empty containers. Solid waste would be recycled to the maximum extent possible.

2.6.3.8 Hazardous Materials Use and Management

Limited quantities of hazardous materials would be used and stored for operation and maintenance activities. These materials would include oils, lubricants, paints, solvents, degreasers and other cleaners, and transformer mineral oil. Transformer mineral oil would be stored at the onsite substations; all other hazardous materials would be stored in the warehouses.

Mineral oil may be stored at the solar facility. Each of the two generation step-up transformers at the onsite substations may contain dielectric fluid (mineral oil) on a concrete pad surrounded by an earthen, fiberglass, or concrete containment berm/curb. The containment area would be lined with an impermeable membrane covered with gravel, and would drain to an underground storage tank. The onsite substations would have a comprehensive Spill Prevention, Control, and Countermeasure Plan in accordance with State and federal regulations. Any stormwater or fluid drained to the tank would be inspected for a sheen prior to disposal. If a sheen is observed, the tank contents would be removed by vacuum truck to an appropriate disposal site. If no sheen or contaminants are detected, the stormwater would be drained onsite.

Any hazardous materials would be stored in appropriate storage locations and containers. Flammable materials, such as paints and solvents, would be stored in nonflammable material storage cabinets with built-in containment sumps. An HMMP would be developed for project operation in compliance with the HMMP for Edwards AFB and the Kern County Fire Department prior to turnover of the site from construction to operation.

2.6.4 Decommissioning, Lease Renewal, and Upgrades

The Developer intends to sell the renewable energy produced by the project for the term of the EUL with the Air Force. Upon completion of the 35-year lease, the Developer may seek to extend the EUL with the Air Force or decommission and remove the system and its components. Prior to decommissioning, a decommissioning environmental impact analysis will be completed to assess how all site improvements should be dismantled and removed from the site consistent with the lease. Upon decommissioning, the solar site could be converted to other uses in accordance with regulations in effect at that time.

It is anticipated that during decommissioning, project structures would be removed from the site. Aboveground and below ground equipment that would be removed include module posts and support structures, onsite transmission poles that are not shared with third parties and the overhead collection system within the project site, inverters, transformers, battery storage containers, electrical wiring, equipment on the inverter pads, and related equipment and concrete pads. The substation would be removed if it is owned by the project; however, if a public or private utility assumes ownership of the substation, the substation may remain onsite to be used as part of the utility service to supply other applications. Project roads would be restored to their preconstruction condition unless the landowner elects to retain the improved roads for access throughout that landowner's property. The area would be thoroughly cleaned and all debris removed. As discussed above, most materials would be recycled to the extent feasible, with minimal disposal to occur in landfills in compliance with all applicable laws.

A collection and recycling program would be executed to promote recycling of project components and minimize disposal of project components in landfills. All decommissioning and restoration activities would adhere to the requirements of the appropriate governing authorities and would be in accordance with all applicable federal, state, and county regulations. The Developer expects a secondary market for PV modules to develop over time. Although energy output may diminish, the PV modules are expected to continue to have a productive life and can be decommissioned from a prime location or recommissioned in another location.

2.7 Environmental Comparison of Alternatives

Table 2-3 Comparison of Alternatives, presents a comparison of the differences in impacts among the alternatives described in Section 2.5.1. The information in Table 2-3 is derived from the detailed discussions of the existing environmental conditions and environmental consequences in Chapter 3 of this Draft EIS/EIR, as well as the technical studies and other material presented in the appendices.

TABLE 2-3
COMPARISON OF ALTERNATIVES

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
Aesthetics	Indirect impacts as a result of dust clouds generated from construction grading activities. Direct impacts to visual resources. Direct impacts to visual resources during decommissioning.	Similar, but reduced impacts to visual resources as Alternative B would only require one-third of the area.	No impacts to visual resources in the Proposed Action area.	Reduced aesthetic impacts as installation of panels on large rooftops would be visually unobtrusive or unnoticed at ground level.
Air Quality	Construction Emissions / *De Minimis* Level Units tons/year (first calendar year) ROG = 1.39 / *50* NOx = 11.89 / *50* CO = 15.51 / *100* SOx = 0.04 / *100* PM_{10} = 9.98 / *70* $PM_{2.5}$ = 1.54 / *100* **Does not exceed *De Minimis* Level** Construction Emissions / *De Minimis* Level Units tons/year (second calendar year) ROG = 2.57 / *50* NOx = 23.31 / *50* CO = 29.82 / *100* SOx = 0.08 / *100* PM_{10} = 17.57 / *70* $PM_{2.5}$ = 2.83 / *100* **Does not exceed *De Minimis* Level** Construction Emissions / *De Minimis* Level Units tons/year (third calendar year) ROG = 1.21 / *50* NOx = 11.43 / *50* CO = 14.93 / *100* SOx = 0.04 / *100* PM_{10} = 9.88 / *70* $PM_{2.5}$ = 1.53 / *100* **Does not exceed *De Minimis* Level**	Construction Emissions / *De Minimis* Level Units tons/year (first calendar year) ROG = 0.58 / *50* NOx = 5.05 / *50* CO = 6.62 / *100* SOx = 0.02 / *100* PM_{10} = 3.77 / *70* $PM_{2.5}$ = 0.61 / *100* **Does not exceed *De Minimis* Level** Construction Emissions / *De Minimis* Level Units tons/year (second calendar year) ROG = 0.53 / *50* NOx = 5.01 / *50* CO = 6.55/ *100* SOx = 0.01 / *100* PM_{10} = 3.78 / *70* $PM_{2.5}$ = 1.45 / *100* **Does not exceed *De Minimis* Level** Operational: Emissions / *De Minimis* Level Units tons/year ROG = 0.16 / *50* NOx = 0.12 / *50* CO = 0.10 / *100* SOx = 0.00 / *100* PM_{10} = 0.02 / *70* $PM_{2.5}$ = 0.01 / *100* **Does not exceed *De Minimis* Level**	No impacts to air quality. If Alternative A is not built, then approximately 656,752 metric tons of carbon dioxide equivalent (MT CO_2e) per year of emissions from electricity generated by fossil fuel sources would not be reduced by renewable electricity from solar energy production.	Reduced impacts to air quality as no construction activities or ground disturbance would occur. Construction emissions related to delivery of materials and workers would be similar to or greater than Alternative A.

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
	Operational Emissions / *De Minimis* Level Units tons/year ROG = 0.23 / *50* NOx = 0.31 / *50* CO = 0.24 / *100* SOx = 0.00 / *100* PM_{10} = 0.06 / *70* $PM_{2.5}$ = 0.02 / *100* **Does not exceed *De Minimis* Level** Decommissioning Comparable in type and magnitude, but likely to be lower than the construction emissions, and not expected to violate national or state ambient air quality standards.	Decommissioning: Comparable in type and magnitude, but likely to be lower than the construction emissions.		
Airspace Management and Use	Less than significant impacts with regard to consistency with the ALUCP, air traffic levels or patterns, safety or operational hazards to aircraft, and glint and glare assessments.	Similar, but reduced impacts due to a smaller area of disturbance.	No impact related to consistency with the ALUCP and air safety hazards, air traffic levels or patterns, safety or operational hazards to aircraft, and glint and glare assessments	Reduced impacts as a construction of a gen-tie lie is not required. Reduced impacts with regard to glint and glare.
Biological Resources	Direct impact to removing a maximum of 4,150 acres of general non-sensitive vegetation and wildlife resources. Direct and indirect impacts to special-status plant species. Direct impacts to special-status (federal and state) wildlife species. Direct impacts to sensitive habitats, including Joshua tree woodlands and wildlife movement corridors.	Similar but reduced potential impacts to special-status plants and wildlife with regard to a smaller amount of construction-related ground disturbance.	No impacts to onsite conditions or existing biological resources, including general vegetation and wildlife resources, special-status plants, special-status wildlife, and sensitive habitats.	Reduced impacts to biological resources as installation of solar panels would occur on currently developed areas.
Cultural and Paleontological Resources	Direct impacts to known and unknown cultural resources, archaeological resources, paleontological resources, and historical resources. Indirect impacts during routine operation and maintenance activities on cultural resources.	Similar but reduced impacts to cultural resources, archaeological resources, paleontological resources, and historical resources due to reduced physical development of the site.	No impacts to cultural or paleontological resources at the project site.	Reduced impacts to cultural resources as only previously developed areas would be modified.
Geology and Soil Resources	Within the project site, there is an absence of any known active faults that cross or come anywhere near the project	Similar but reduced potential for adverse soil conditions; similar potential for ground subsidence or seismic-related ground failures.	No impacts to geology, minerals, or soils.	Reduced impacts to geology and soils as it would not require in-ground construction and minimally expose people to geologic or seismic hazards.

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
	site; ergo, there would be no adverse effects related to fault rupture. The site is not located in an area undergoing fluid withdrawal that could generate a potential subsidence effect. Construction of the proposed project would involve earthwork activities that could expose soils to erosion.	Reduced potential for erosion due to smaller site.		
Greenhouse Gas Emissions	Construction Emissions / CEQ Level Units tons/year (first calendar year) CO_2e = 3,790.26 / *25,000* **Does not exceed CEQ Level** Construction Emissions / *CEQ* Level Units tons/year (second calendar year) CO_2e = 7,608.45 / *25,000* **Does not exceed CEQ Level** Construction Emissions / *CEQ* Level Units tons/year (third calendar year) CO_2e = 3,945.72 / *25,000* **Does not exceed CEQ Level** Operational Emissions / *CEQ* Level Units tons/year CO_2e = 3,948.65 / *25,000* **Does not exceed CEQ Level** Decommissioning Comparable in type and magnitude, but likely to be lower than the construction emissions, and not expected to violate national or state ambient air quality standards.	Construction Emissions / *CEQ* Level Units tons/year (first calendar year) CO_2e = 3,782.10 / *25,000* **Does not exceed CEQ Level** Construction Emissions / *CEQ* Level Units tons/year (second calendar year) CO_2e = 1,902.28 / *25,000* **Does not exceed CEQ Level** Operational: Emissions / *CEQ* Level Units tons/year CO_2e = 1,473.01 / *25,000* **Does not exceed CEQ Level** Decommissioning: Comparable in type and magnitude, but likely to be lower than the construction emissions.	No generation of GHG emissions that would cause any impact to global climate change. Since Alternative A would not be built, approximately 656,752 MT CO2e per year of emissions from electricity generated by fossil-fuel sources would not be reduced by renewable electricity from solar energy production.	Impacts would be similar to, or greater than, Alternative A, because the GHG emissions from delivery of materials and workers would travel to greater distances at which construction sites would be located.
Hazards and Hazardous Materials	Potential impacts from the accidental release of hazardous materials during construction, maintenance and decommissioning.	Similar but reduced likelihood of accidental release of hazardous materials used onsite or potential due to smaller site and shorter construction time.	No impacts related to the accidental release of hazardous materials.	Reduced impacts as no construction activities would occur that could potentially disturb hazardous materials.
Infrastructure	Construction period would require up to 200 AFY of water to support concrete manufacturing, dust control, and sanitation. No impacts to electrical, natural gas, or other utility lines.	Similar but reduced usage of water and wastewater during construction due to the reduced size of the facility.	No impact to water supplies or generation of wastewater or solid waste.	Reduced impact as solar equipment installed on existing structures would not require new, in-ground construction.

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
	Operation activities would require up to 30 AFY. A septic system would be needed to dispose of wastewater. Solid waste generated would not exceed the capacity of the Rosamond Landfill.			
Land Use	No conflict with FAR regulations, Edwards AFB Installation Development Plan, Kern County General Plan, and West Edwards Road Settlement Specific Plan.	Similar impacts to Alternative A.	No impact to applicable land use plans, policies, and regulations.	Similar impacts to Alternative A.
Noise	Construction and decommissioning: maximum noise level generated would be 93 dBA at 50 feet from noise source, or 87 dBA from nearest sensitive receptor. Operation and maintenance would not result in any activities that would generate substantial temporary or periodic increases in ambient noise levels.	Reduced noise impacts due to the reduced size of the facility and siting further from the nearest sensitive receptor, and shorter construction timeframe.	No impact to noise levels associated with construction, operation and maintenance, and decommissioning.	Greater impacts as construction noise could occur adjacent to residences, which would result in impacts to a larger number of sensitive receptors.
Public Services	Increase in truck and employee traffic on haul routes during construction and operation could increase impacts on fire protection and police protection services.	Similar but reduced as this Alternative would require fewer construction workers and operations staff.	No impact to fire and police protection services.	Reduced impacts as this Alternative would not increase demand of public services.
Socioeconomics	Construction workforce consists of 100 to 450 daily workers, which would generate an estimated 779 jobs over the 2-year construction period. Operation and maintenance would require approximately 10 full-time personnel.	Similar but reduced impacts as this Alternative would require fewer workers and a reduction in the duration of construction. It would also require fewer full-time employees during operation and maintenance due to the smaller size of the facility.	No impact to employment and economic benefits.	
Environmental Justice	There are no communities of concern in the study area; therefore, the project would not result in human health and environmental adverse effects that would cause disproportionately high and adverse impacts on local and regional communities of concern, including minority or low-income populations.	There are no communities of concern in the study area; therefore, there the project would not result in human health and environmental adverse effects that would cause disproportionately high and adverse impacts on local and regional communities of concern, including minority or low-income populations.	No impact on local and regional communities of concern, including minority or low-income populations.	There are no communities of concern in the study area; therefore, the project would not result in human health and environmental adverse effects that would cause disproportionately high and adverse impacts on local and regional communities of concern, including minority or low-income populations.
Transportation	Construction and decommissioning: increased traffic (1,840 daily trips) with no	Construction and decommissioning: reduced duration of traffic increases.	No impacts to existing traffic conditions on area roadways.	Reduced impact as construction installation trips would be dispersed and would not congregate in one location.

Resource	Alternative A: Proposed Project (Up to 4,000-acre Solar PV Project)	Alternative B: Reduced-Scale Project (1,500-acre Solar PV Project)	Alternative C: No Action / No Project	Alternative D: Rooftop Solar (CEQA Alternative only)
	substantial change in LOS on affected roadways. Operation and maintenance: minor traffic increase.	Operation and maintenance: slightly reduced traffic increase.		
Water Resources	Construction and decommissioning: potential impacts to water quality through erosion and sedimentation. A maximum of approximately 200 AFY of water per year would be required during the 2-year construction period. Approximately 200 total AFY would be required during decommissioning for dust control and sanitation. During operation, the proposed project would require approximately 30 AFY.	Similar construction, impacts to hydrology and water quality. Reduced impacts related to erosion and flooding due to fewer disturbed ground acres and shorter construction period. Similar operational and decommissioning impacts, reduced amounts of pervious ground surface lost.	No impacts related to hydrology and water quality.	Reduced impacts, as there would be no increase in impervious surfaces.

Relationship of the Project to Other Solar Projects

The proposed project is being developed independently of other approved or proposed solar projects in the County. If approved, the project would be subject to its own use permits, conditions of approval, interconnection agreements, and power purchase agreements. The County understands that the project facilities would be built and operated independently of any other solar project, and, if approved, would not depend on any other solar project for economic viability.

CHAPTER 3
Environmental Analysis

3.0 Introduction

This chapter of the EIS/EIR assesses the environmental consequences or impacts that would result from implementation of the Proposed Action or other alternatives described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, on resources, resource uses and other important topics (including hazardous materials and safety, social and economic considerations, and environmental justice conditions). "Resources" include air, soil, water, vegetative communities, wildlife, as well as cultural, paleontological, and visual resources. "Resource uses" include land use planning, minerals, recreation, transportation and public access, and utilities and public services. For each resource area evaluated, Chapter 3 includes a description of the regional and local environmental setting; summary of the applicable laws, regulations, plans, and standards; summary of the analytical methodology used; analysis of direct, indirect, and cumulative effects; identification of mitigation measures proposed to address significant impacts; an explanation of the residual impacts that would remain after the implementation of all proposed project design features, mitigation measures; and analysis of CEQA-specific significance criteria as identified in the CEQA Guidelines (14 Cal. Code Regs. §15000 et seq.) Appendix G.

This chapter documents the lead agencies' analysis of the direct, indirect, and cumulative effects that could occur under NEPA and CEQA as a result of implementing each of the alternatives. It considers the impacts of short-term uses, such as construction and decommissioning-related truck traffic, and the impacts that would occur over the longer-term operation and maintenance period or that would persist after initial occurrence, such as removal of slow-growing vegetation, or destruction of irretrievable or irreplaceable resources. It also identifies mitigation measures that could avoid or reduce adverse impacts, and summarizes the residual and unavoidable adverse impacts on an issue-by-issue basis.

3.0.1 Baseline

The baseline for purposes of this EIS/EIR is on or about November 27, 2017, which is the date the Air Force published a Notice of Intent announcing the intentions of the Air Force and the County to prepare an EIS/EIR (78 Fed. Reg. 32240-32241). The County published a Notice of Preparation for the project for CEQA purposes on November 27, 2017. The baseline is the affected environment described in Sections 3.1 through 3.16 and is intended to reflect the pre-project environmental conditions to which the potential impacts of all alternatives are compared.

3.0.2 Analytical Assumptions

The impact analyses contained in this chapter were conducted using the following requirements:

1. The laws, regulations, and policies applicable to the Air Force when it authorizes leases for renewable energy development facilities would be applied consistently for all action alternatives.
2. The laws, regulations, plans, ordinances, and policies applicable to the County authorizing gen-tie lines would be applied consistently for all action alternatives.
3. The proposed facility would be constructed, operated, maintained, and decommissioned as described in each action alternative.
4. The Air Force holds the proposed project area on Edwards AFB as proprietary legislative jurisdiction. Private or commercial development within this project area requires application of federal laws, regulations and other orders and instructions. However, some of the project actions trigger application and/or consideration of State and local laws, regulations, ordinances and other relevant planning instruments.

3.0.3 Types of Effects

The potential impacts from those actions that could have direct, indirect, and cumulative effects are considered for each resource. The terms "effects" and "impacts" as used in this document are synonymous and could be beneficial or detrimental.

For NEPA purposes, Council on Environmental Quality (CEQ) regulations define direct effects as effects "…which are caused by the action and occur at the same time and place" and indirect effects as effects "…which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1508.8(a)-(b)). This document combines the discussion of direct and indirect effects. Chapter 3 also provides descriptions of the residual effects of any adverse impacts that remain after mitigation measures have been applied.

CEQ regulations define a cumulative effect as "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions" (40 CFR 1508.7). The scenario used for defining and analyzing cumulative impacts is discussed in Section 3.5, below.

For CEQA purposes, CEQA Guidelines §15358 defines "effects" and "impacts" synonymously to include: direct or primary effects, which are caused by the project and occur at the same time and place; and indirect or secondary effects, which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. "Cumulative effects" refer to two or more individual effects, which, when considered together, are considerable or that compound or increase other environmental impacts (CEQA Guidelines §15355). The cumulative effect from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

3.0.4 Impact Significance Criteria

NEPA

Under NEPA, the Environmental Consequences section of an EIS must include a discussion of environmental effects "and their significance" (40 CFR §§1502.16(a) and (b)). According to 40 CFR §1508.27, the term "significantly" as used in NEPA requires considerations of both context and intensity. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. Intensity refers to the severity of the impact. The following should be considered in evaluating intensity:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial.
2. The degree to which the proposed action affects public health or safety.
3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.
5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Federal ESA.
10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

In addition, 40 CFR §§1502.25, 1500.2(c), 1500.4(k), 1500.5(g), require that environmental review laws and executive orders be integrated with EISs to the fullest extent possible and 40 CFR §1502.2(d) requires that an EIS state how the alternatives achieve the requirements of environmental laws and policies.

CEQA

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify criteria, as established in Appendix G of the CEQA Guidelines and the Notice of

Preparation/Initial Study, to determine if a project could have a significant adverse effect on the environment. In contrast to NEPA, the *CEQA Guidelines* include unique significance thresholds for each resource topic. As a result, the significance thresholds for each resource topic are presented in each section of Chapter 3 prior to the discussion of impacts.

3.0.5 Resources and Uses Not Affected or Present in the Action Area

Resources and resource uses that are not present in the project area or not affected by the alternatives include recreational resources and population and housing.

3.0.6 Cumulative Projects

NEPA

NEPA requires that a EIS evaluate a project's cumulative impacts. The CEQ regulations (40 CFR §§ 1508.7 and 1508.8) define the impacts and effects that must be addressed and considered by federal agencies in satisfying the requirements of the NEPA process, which includes direct, indirect and cumulative impacts:

> *"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

CEQA

CEQA requires that an EIR evaluate a project's cumulative impacts. Cumulative impacts are the project's impacts combined with the impacts of other related past, present, and reasonably foreseeable future projects. As set forth in the CEQA Guidelines, the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. As stated in CEQA, Title 14 § 21083(b), "a project may have a significant effect on the environment if the possible effects of a project are individually limited but cumulatively considerable."

According to the *CEQA Guidelines*:

> *"Cumulative impacts refer to two or more individual effects which, when considered together, are considerable and which compound or increase other environmental impacts.*
>
> *(a) The individual effects may be changes resulting from a single project or a number of separate projects.*
>
> *(b) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely*

> *related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3 § 15355).*

In addition, as stated in *CEQA Guidelines*, it should be noted that:

> *"The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." (CCR, Title 14, Division 6, Chapter 3 § 15064[h][5]).*

Cumulative impact discussions for each environmental topic area are provided at the end of each technical analysis contained within Chapter 3, under "Cumulative Impact Analysis" A list and description of past, present, and reasonably foreseeable projects near the project site can be found in **Table 3-1**. **Figures 3-1** and **3-2** show the approximate location of the proposed solar projects in Kern and Los Angeles Counties considered in the cumulative analysis.

3.0.7 Approach to the Analysis of Cumulative Effects

This document analyzes cumulative impacts of the construction, operation and maintenance, and closure and decommissioning of the Proposed Action and other alternatives. This EIS/EIR considers the direct and indirect effects of each alternative together with the effects of the other actions that could combine geographically and temporally (i.e., would be causing impacts in the same area at the same time as the Proposed Action and alternatives) and, thereby, cause a cumulative effect. For each resource or issue considered in this Chapter 3, the cumulative effects analysis identifies the relevant geographic area and time period within which cumulative effects could occur and then describes existing conditions (which are the combination of the natural condition and the effects of past actions) and the effects of other present and reasonably foreseeable future actions in combination with the effects of each alternative. Where relevant, the cumulative effects analysis also describes the relationship of the cumulative effects to any established thresholds. A quantitative analysis is provided where possible; where quantification is infeasible, qualitative effects are described.

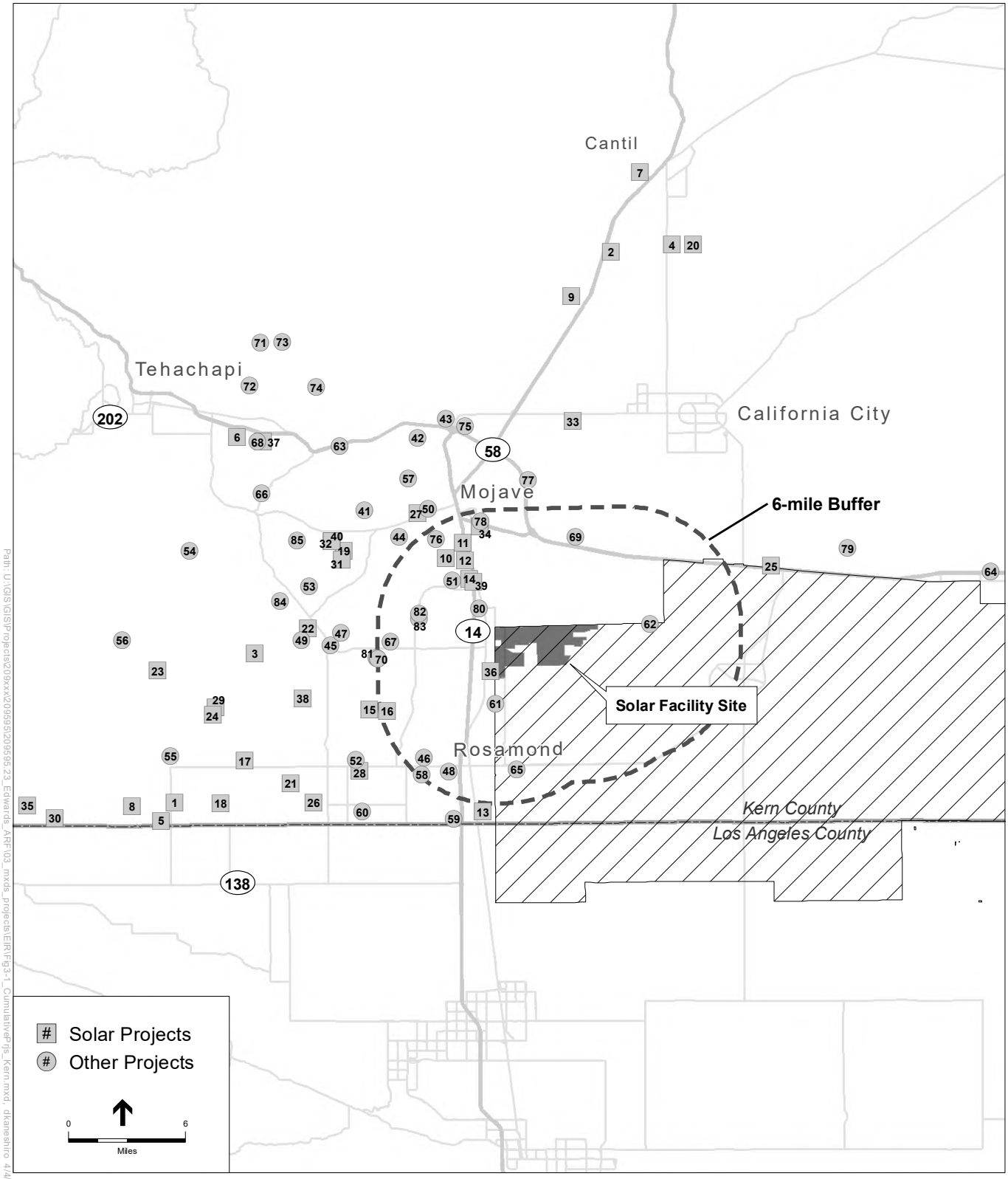

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Figure 3-1: EASTERN KERN COUNTY CUMULATIVE PROJECTS MAP

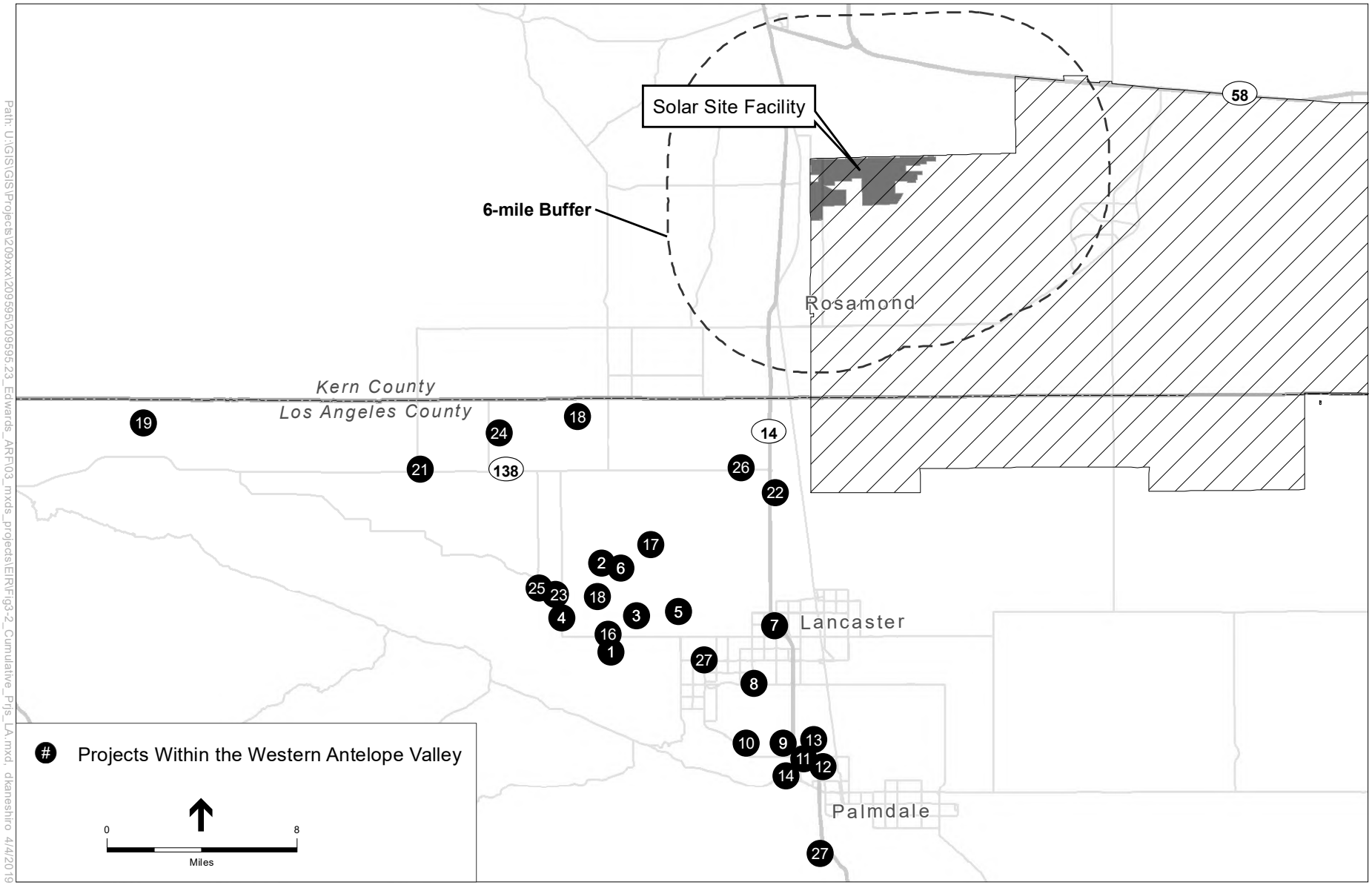

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Figure 3-2: LOS ANGELES COUNTY CUMULATIVE PROJECTS MAP

TABLE 3-1
CUMULATIVE PROJECTS LIST

Project Name/ CASE ID	Project Description	Area	Project Status
EASTERN KERN COUNTY PROJECTS (Figure 3-1)			
SOLAR PROJECTS			
1. Antelope Valley Solar Project by Renewable Resources Group	650 MW	5,698 acres	Approved 6/23/11
2. Beacon Solar by Nextera	250 MW	2,320 acres	Approved 10/1/12
3. Aurora Solar, LLC (Jen Bradford)	40 MW	320 acres	Construction has not commenced
4. Fremont Valley Preservation Solar Project	1,008 MW	4,806 acres	Pending approval
5. Kingbird Solar	40 MW solar facility	324 acres	Approved October 2014
6. GE Energy LLC by URS Corp	40 MW	337 acres	Approved 6/19/09
7. LADWP	10 MW	75 acres	Approved 12/16/09
8. RE Astoria by RE Astoria LLC (Recurrent)	175 MW	2,000 acres	Approved December 2014
9. RE Barren Ridge	74 MW	588 acres	Approved 12/6/11
10. RE Columbia	20 MW	165 acres	Operational
11. RE Columbia 2	20 MW	132 acres	Operational
12. RE Columbia 3	10 MW	68 acres	Operational
13. RE Great Lakes	5 MW	40 acres	Approved 12/6/11
14. RE Rio Grande	47 MW	5 acres	Approved 12/6/11, Under construction
15. RE Rosamond 1	20 MW	320 acres	Approved 12/6/11, Under construction
16. RE Rosamond 2	20 MW	160 acres	Approved 12/6/11, Under construction
17. Rosamond Solar Array by First Solar/Rosamond Solar, LLC	150 MW	1,177 acres	Approved October 2014
18. Rosamond Solar by SGS Antelope Valley	120 MW	960 acres	Approved 11/9/2010
19. SEPV Mojave West	20 MW	180 acres	Operational
20. Fremont Solar (Springbok 2 Solar Farm) by 8 Minute Energy Renewables (3 sites)	230 MW	1,296 acres	Approved March 2014
21. Willow Springs Solar Array by First Solar	160 MW	1,402 acres	Approved March 2016
22. Apollo Solar	60 MW	500 acres	Active
23. Camino Solar by Aurora Solar	44 MW	339 acres	EIR in progress
24. EDF Renewable Energy	100 MW	2,250 acres	No activity since 8/2014, not complete
25. North Muroc Solar by Nautilus Solar	9 MW	73 acres	Placed in suspense 7/22/2012, not complete

TABLE 3-1
CUMULATIVE PROJECTS LIST

Project Name/ CASE ID	Project Description	Area	Project Status
26. Sunshine Solar	40 MW	319 acres	No activity since 5/2012, not complete
27. The Aeromen LLC	1- 100 MW, and 3- 5 MW	237 acres	Construction has not commenced
28. Gettysburg Solar	20 MW	159 acres	Construction has not commenced
29. Valentine Solar	115 MW	1,430	Approved June 2016
30. RE Garland Solar	200 MW	2,116 acres	Approved
31. Windhub Solar	40 MW	147.5 acres	EIR in progress
32. Sunlight Partners	Info unavailable	29 acres	Kill letter sent 2/2/2012, not complete
33. Sunlight Partners 2	Info unavailable	19 acres	Kill letter sent 3/3/2014, not complete
34. Mojave Solar Park by Cal West Energy (Jonathan Bender)	Info unavailable	29 acres	Construction has not commenced
35. RE Gaskell West Solar Project	125 MW	1,463 acres	Approved April 2017
36. FRV Mojave Solar, LP	20 MW	174 acres	Operational
37. GE Energy by Ty Remington	20 MW	820 acres	Construction has not commenced
38. IP Solar Company	Info unavailable	40 acres	Construction has not commenced
39. Rio Grande Solar by Recurrent Energy	5 MW	46 acres	Operational
40. Sinarpower Inc.	20 MW	17.5 acres	Construction has not commenced
41. Sanborn Solar Project	300 MW	2,102 acres	Construction has not commenced
NON-SOLAR PROJECTS			
42. Addison Energy Wind Project	Proposed wind facility	1,325 acres	Operational
43. Alta East by Alta	318 MW wind facility with up to 106 wind turbines	2,592 acres	Operational
44. Alta Infill II Wind Energy Project EIR	530 MW wind facility	5,185 acres	Operational
45. Alta-Oak Creek Mojave Project EIR	220 kV wind energy generation facility	9,120 acres	Operational
46. Avalon Wind Energy Project	300 MW wind energy generation facility	7,369 acres	Approved; Construction has not commenced.
47. Barton, Larry by Pinnacle Civil Engineering	Info unavailable	Info unavailable	Info unavailable
48. Blue Eagle Lode Mining Company	Info unavailable	1.75 acres	Info unavailable
49. California Builders	Info unavailable	Info unavailable	Info unavailable

TABLE 3-1
CUMULATIVE PROJECTS LIST

Project Name/ CASE ID	Project Description	Area	Project Status
50. Catalina Renewable Energy Project	200 MW wind from 134 wind turbines and 150 MW solar from 2,241,000 panels	6,739 acres	Approved December 2011; 128 MW solar facility operational
51. Catalina Solar 2 LLC (Enxco/ EDF)	Catalina 350 MW Wind & Solar Project. This CUP is for the solar facility.	Info unavailable	Operational
52. Golden Queen Mining Company	Open pit mining with cyanide heap leach processing	2,500 acres (905 acre mine site)	Mine and processing facilities are operational.
53. Largent Group, LLC/Cornerstone (10381)	Info unavailable	Info unavailable	Info unavailable
54. Lower West Wind Energy Project	14 MW from seven wind turbines	185 acres	Operational
55. Morgan Hills Wind Energy Project	230 MW from 76 wind turbines	3,808 acres	Approved October 2011; Construction has not commenced.
56. Pacific Wind Energy	140 MW from wind turbine generators	8,500 acres	Operational
57. 2PdV Wind Energy Project	300 MW of electricity from wind turbines	3,373 acres	Approved August 2008
58. Rising Tree Wind Energy Project	Up to 41 wind turbines producing up to 135 MW	1,535 acres	Approved May 2014; Approximately 30 turbines constructed to date.
59. Royal Investor's Group, LLC by Cornerstone Engineering	Info unavailable	Info unavailable	Info unavailable
60. Superior Real Estate, Inc.	Info unavailable	Info unavailable	Info unavailable
61. Terra Five, LLC by Hall & Foreman, Inc.	Info unavailable	Info unavailable	Info unavailable
62. Utility Corridor 3 on Edwards AFB	Utility corridor	Info unavailable	May be developed as a utility corridor in the future
63. Utility Corridor 9 on Edwards AFB	Utility corridor	Info unavailable	May be developed as a utility corridor in the future
64. California High Speed Rail	Rail corridor	Info unavailable	Info unavailable
65. Caltrans Kramer Junction Project-Realignment and Widening	Highway realignment and widening of a 13-mile section of SR 58	Info unavailable	Under construction
66. Amendment to Edwards AFB R-2515 Airspace	Airspace amendment for consolidation of multiple flight training routes, the addition of a new route, and the introduction of new weapons systems	1,575 square miles	Complete
67. Cameron Canyon Ridgeline Wind Project	Wind energy project	20.53	Active
68. Renhong QU	Dog breeding and dog kennels	4.7 acres	Active

TABLE 3-1
CUMULATIVE PROJECTS LIST

Project Name/ CASE ID	Project Description	Area	Project Status
69. Ares, LLC-Francesca Cava	Test track for and energy storing rail system	200 acres	Approved September 2016
70. AT&T – Vance Pomeroy	80 foot tall ball field light standard for wireless communication facility	8.92 acres	Approved March 2017
71. AT&T – Vance Pomeroy	68'-6" tall monopine wireless communication facility with associated equipment shelter	1.25 acres	Active
72. Randy Hardenbrook	2nd MH to exceed size, might be changed to additional dwelling unit	19.85 acres	Info unavailable
73. Jeff Quinn	A CUP for a private airport for recreational use	20 acres	Info unavailable
74. Jennifer Arn	Kennel - dog breeder for Golden Retrievers	5 acres	Info unavailable
75. Christopher Snow	4 RV Pedestals, 19.16.030 C for recreation	2.5 acres	Info unavailable
76. Dona Recchia	8.5/2.5, 8.3, & 4.1 to 6.3	233.06 acres	Info unavailable
77. Grigor Termendjian	LNG Plant	9.76 acres	Info unavailable
78. De Monte Family Trust -Ralph De Monte	Request is undefined	20.52 acres	Info unavailable
79. Water Resorts Inc by Nelms Surveying	Zone change to M-1	20.04 acres	Info unavailable
80. Kilby, Bob/John Bell	M-1 PD FPS H	2.5 acres	Info unavailable
81. Nazaryan, Tigran	RV Park	1 acre	Info unavailable
82. Daunert, Diana/D Dmohowski	Animal shelter & additional dwelling	10 acres	Info unavailable
83. Maloney, Jay	Movie site	2.28 acres	Info unavailable
84. Rosa Garcia	Mobile home not meeting age/arch	2.44 acres	Info unavailable
85. Frieling, Diana	Wild Animal Keeping	40 acres	Info unavailable
86. Romanowitz, Harold/J E Duggan	Wind-driven electrical generators	n/a	Operational
LOS ANGELES COUNTY PROJECTS (Figure 3-2)			
City of Lancaster			
1. CUP 11-02	3 MW solar facility, RR - 2.5	Info unavailable	Approved 9/19/11
2. CUP 11-03	10 MW solar facility, RR - 2.5	Info unavailable	Approved 9/19/11
3. CUP 11-05	20 MW solar facility	Info unavailable	Approved 9/19/11
4. CUP 11-07	30 MW solar facility, RR - 2.5, UR, SP	Info unavailable	On hold

TABLE 3-1
CUMULATIVE PROJECTS LIST

Project Name/ CASE ID	Project Description	Area	Project Status
5. CUP 11-09	68 single family dwellings, drainage channel and park	Info unavailable	In review
6. CUP 10-22	PV solar facility comprised of two 19 MW solar fields	Info unavailable	Info unavailable
7. CUP 04-10	Marriott Towne Place Suites	52,594± SF	Info unavailable
8. CUP 10-20	Hindu temple, hall and other structures	2.48± acres; 2,169± SF Hindu temple, 2,017± SF hall	Info unavailable
City of Palmdale			
9. CUP 12-008	Proposed bonafide restaurant/cocktail lounge/nightclub	6,000 SF	Approved 6/18/13
10. SPR6-10-1T	2 year TE to previously approved project for 80 detached condos	12.3 acres	Approved 9/5/13
11. PA11-019	5 commercial retail buildings and carwash	4.9 acres	Completed 6/18/13
12. PA11-021	Industrial use consisting of one building totaling approximately 350,640 SF	350,640 SF on a 18.99 acre parcel	Completed 6/18/13
13. PA13-001	4.91 acres into retail/commercial in 5 buildings	44,400 SF	Completed 6/18/13
14. PA13-005	167 condo lots and a recreation lot	34.8 acres	Completed 6/18/13
Unincorporated Los Angeles County			
15. R2009-02089 Alpine Solar	92 MW photovoltaic solar electricity generation facility	835 acres	Approved; final letter distributed 12/4/13
16. R2011-00798 Western Antelope Blue Sky	40 MW photovoltaic solar electricity generation facility and a 10,000 gallon water tank located in the A-2-5 zone	157 acres	Approved 6/11/14
17. R2011-00799 American Solar Greenworks	35 MW photovoltaic solar electricity generation facility and a 10,000 gallon water tank located in the A-2-2 zone	135.6 acres	Approved 6/11/14
18. R2011-00807 Antelope Solar Greenworks	52 MW photovoltaic solar electricity generation facility and a 10,000 gallon water tank located in the A-2-2 zone	256 acres	Approved 6/11/14

TABLE 3-1
CUMULATIVE PROJECTS LIST

Project Name/ CASE ID	Project Description	Area	Project Status
19. R2012-00024 Quail Lake	100 MW photovoltaic solar electricity generation facility	692 acres	Comments received 3/22/12
20. R2013-03397 Antelope Valley Solar	The project is a solar photovoltaic generating facility up to 7.45 MW in size	80 acres	Approved 1/5/2015
21. R2009-02239 AV Solar Ranch One	240 MW PV Project	2100 acres	Approved 12/7/10
22. R2012-00849 Rutan	4 MW PV Project	45.3 acres	Approved 2/19/13
23. R2012-01589 West Antelope Solar Project	20 MW PV Project	263 acres	Approved 5/6/14
24. R2010-00808 Antelope Valley Solar	156 MW PV Project	1238 acres	Approved 1/3/13
25. R2011-00801 Silver Sun Greenworks	20 MW PV Project	80 acres	Approved 6/11/14
26. R2011-00805 Lancaster WAD	5 MW PV Project	39 acres	Approved 6/11/14
27. R2011-01290	Construction, operation, and maintenance of an operations and maintenance facility for the Quartz Hill Water District		Approved 2/5/14
28. R2015-00800 Neenach Solar	2 MW PV Project	40 acres	MND pending approval
29. RPPL2016-001556 Lancaster Energy Project	42 MW PV Project	107 acres	Approved 5/2/18
30. Project 91055	43 single-family residences on one acre minimum lots		Application received

If the Proposed Action or an alternative would have no direct or indirect effects on a resource, then it could not cause or contribute to potential cumulative effects on that resource. In these instances, no cumulative effects analysis has been completed. See, for example, Section 3.0.5, Resources and Uses Not Affected or Present in the Action Area, above.

3.0.8 Mitigation Measures Identified in the Analysis

For impacts identified in the following resource sections, mitigation measures have been developed to avoid or reduce potential adverse environmental effects; these measures would be implemented during all appropriate phases of the project, from initial ground breaking and construction, to operation and maintenance, and through closure and decommissioning. The analysis considers the project's potential environmental impacts after the implementation of all project design features, other measures to reduce potential impacts, and regulatory requirements of federal, state, and local agencies.

An Environmental and Construction Compliance Monitoring Plan (ECCMP)/Mitigation Monitoring, Reporting, and Compliance Program (MMRCP) would be prepared if the Proposed Action or another action alternative is approved to ensure the effective implementation of the mitigation measures identified to address adverse impacts.

Because these mitigation measures are developed from a variety of sources, they also may be required by agencies other than the Air Force or the County and their implementation would be enforced by those other agencies. For instance, any Reasonable and Prudent Measures identified by the USFWS as part of the Federal ESA Section 7 process would be included in the ROD. If the Proposed Action or another action alternative is approved, the developer would be required by the lease to comply with the requirements of those other agencies (see, e.g., 43 CFR 2805.12(a) [federal and state laws and regulations], and (i)(6) [more stringent state standards for public health and safety, environmental protection and siting, constructing, operating, and maintaining any facilities and improvements on the site]). Any non-compliance with implementation of these other requirements may affect the status of the lease.

3.1 Aesthetics

3.1.1 Affected Environment

This EIS/EIR section describes the affected environment for aesthetic resources in the area of the Proposed Action, including the regulatory and environmental settings.

3.1.1.1 Scoping Issues Addressed

No comments related to aesthetic resources were received.

3.1.1.2 Visual Concepts and Terminology

When viewing a landscape, people may have different responses to that landscape and any proposed visual changes, based upon their values, familiarity, concern, or expectations for that landscape and its scenic quality. The visual sensitivity of a landscape is also affected by the travel speed at which a person is viewing the landscape (e.g., high speeds on a highway, low speeds on a hiking trail, or stationary at a residence). Because each person's attachment to and value for a particular landscape is unique, visual changes to that landscape inherently affect viewers differently. However, generalizations can be made about viewer sensitivity to scenic quality and visual changes. For example, recreational users (e.g., hikers, equestrians, tourists, and people driving for pleasure) typically have the highest concern for scenery and landscape character since the activities they are partaking in focus on visual character with prolonged viewing times.

The same feature of a project can also be perceived differently by people depending on the distance between the observer and the viewed object. This distance is defined as "viewing distance" or "distance zones." For the purpose of this analysis, distance zones are delineated as foreground-middleground, background, and seldom-seen. When a viewer is closer in proximity to a viewed object in the landscape, more detail can be seen and there is greater potential influence of the object on visual quality because of its form or scale (relative size of the object in relation to the viewer). When the same object is viewed at background distances, details may be imperceptible but overall forms of terrain and vegetation are evident, and the horizon and skyline are dominant. In the middleground, some detail is evident (like the foreground) and landscape elements are seen in context with landforms and vegetation patterns (like the background). For this analysis, the following three viewing distances were used, as described and defined by the Bureau of Land Management (BLM) (1984):

- Foreground-Middleground – Areas visible from a travel route, use area, or other observation point to a distance from 3 to 5 miles away. The outer boundary of this zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape. Vegetation is apparent only in patterns or outline.
- Background – The visible area of a landscape that lies beyond the foreground-middleground. Usually from a minimum of 3 to 5 miles to a maximum of about 15 miles from a travel route, use area, or other observer point. Atmospheric conditions in some areas may limit the maximum to about 8 miles or less.
- Seldom-Seen – Areas that are not visible within the foreground-middleground and background zones and areas beyond the background zones.

The following terms are used in the subsequent discussion to describe and assess the aesthetic setting and potential impacts resulting from implementation of the Proposed Action.

Key Observation Point (KOP). One point or a series of points within a project viewshed from which views of the project would be most revealing or most representative of views from sensitive receptors.

Scenic vista. A distant public view along or through an opening or corridor that is recognized and valued for its scenic quality. It is an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing. A scenic vista may be officially recognized or designated (e.g., within local planning documents or the California Department of Transportation (Caltrans) Scenic Highway Program, or informally recognized as scenic in nature (e.g., mountain peaks or coastal bluffs).

Scenic highway. Any stretch of public roadway that is designated as a scenic corridor by a federal, state, or local agency.

Sensitive receptors or sensitive viewpoints. Viewer responses to visual settings are inferred from a variety of factors, including distance and viewing angle, type of viewers, number of viewers, duration of view, and viewer activities. Sensitive viewpoints (those viewpoints from which project impacts are assessed) typically include any scenic vistas, scenic highways, residences, public parks, recreational areas, and/or culturally important locations from which the project sites could be visible.

Viewshed. The viewshed for a project is defined as the surrounding geographic area from which the project is likely to be seen, based on topography, atmospheric conditions, land use patterns, and roadway orientations. “Project viewshed” is used to describe the area surrounding a project site where a person standing on the ground or driving a vehicle can view the project site.

3.1.1.3 Regulatory Framework

There are no federal or state regulations that apply to implementation of the Proposed Action.

Local

Kern County General Plan

The gen-tie route options would be located within the jurisdiction of the Kern County General Plan. In addition, construction of the generation tie lines would require Kern County approvals and is subject to the General Plan’s visual-related policies (see Section 3.11, Land Use).

The Land Use, Open Space, and Conservation Element of the Kern County General Plan evaluates the visual and aesthetic setting of Kern County and assesses the potential for visual impacts.

The Kern County General Plan Circulation Element provides guidelines for development near Scenic Routes. A Scenic Route is defined in the Kern County General Plan as any freeway, highway, road, or other public right-of-way which traverses an area of exceptional scenic quality. A roadway can only be designated as a scenic route by direct action of the Kern County Board of

Supervisors or the State of California. A route may not be selected as scenic until a visual assessment of the route has been conducted to determine if the route meets the current scenic highway criteria and to what extent development has encroached on the scenic views. The County also has to prepare and adopt a plan and program for the protection and enhancement of adjacent roadside viewshed land. The Kern County Board of Supervisors has not designated any roads as "scenic" within the county.

The Kern County General Plan provides goals and policies for the design features of development projects in order to reduce impacts of such projects. The policies and implementation measures in the Kern County General Plan for aesthetic resources that are applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

1.10.7 Light and Glare

Policies

Policy 47: Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.

Policy 48: Encourage the use of low-glare lighting to minimize nighttime glare effects on neighboring properties.

Implementation Measure

Measure AA: The County shall utilize CEQA guidelines and the provisions of the Zoning Ordinance to minimize the impacts of light and glare on adjacent properties and in rural undeveloped areas.

In addition to the Kern County General Plan, the Proposed Action's gen-tie route options would also be located within the following Kern County Specific Plans:

The Mojave Specific Plan establishes goals, policies, and implementation measures intended to protect visual resources that are general in nature and are not specific to development such as the Proposed Action, including open space and scenic land recommendations to protect all designated or proposed Scenic and County Highways.

The West Edwards Road Settlement Specific Plan states the preservation of Lookout Hill from any development would be encouraged, and all grading of land should be accomplished under permit in such a manner as to preserve the scenic values as feasible.

The South of Mojave Elephant Butte Specific Plan establishes recommendations and implementation measures addressing open space, recreation, and circulation within the plan area.

These recommendations and implementation measures include natural resource and scenic land use policies.

The West Edwards Road Settlement Specific Plan contains recommendations and implementation measures addressing land use, open space, and conservation, including scenic resources.

The Willow Springs Specific Plan contains goals, policies, and implementation measures intended to protect visual resources that are general in nature and are not specific to development such as the Proposed Action, including the open space and conservation recommendations to maintain larger areas of open space and preserve the natural appearance and terrain as much as possible.

Kern County Zoning Ordinance

Chapter 19.81 Dark Skies Ordinance establishes measures to preserve Kern County dark skies, and thus a minimal approach is taken to outdoor lighting, as excessive illumination can create a glow that may obscure the night sky and may constitute a nuisance. The purpose of this ordinance is to provide requirements for outdoor lighting within specified unincorporated areas of Kern County to encourage a safe, secure, and less light-oriented nighttime environment for residents, businesses, and visitors.

Objectives

Objective 1: Encourage a safe, secure, and less light-oriented night-time environment for residents, businesses and visitors.

Objective 2: Promote a reduction in unnecessary light intensity and glare, and to reduce light spillover onto adjacent properties.

Objective 3: Protect the ability to view the night sky by restricting unnecessary upward projections of light.

Objective 4: Promote a reduction in the generation of greenhouse gases by reducing wasted electricity that can result from excessive or unwanted outdoor lighting.

Kern County Development Standards

The Kern County Development Standards have specific regulations pertaining to lighting standards. Lighting must be designed so that light is reflected away from surrounding land uses so as not to affect or interfere with vehicular traffic, pedestrians, or adjacent properties.

3.1.1.4 Environmental Setting

Regional Setting

The proposed solar facility would be located on the northwest corner of Edwards AFB, approximately 6 miles northeast of the community of Rosamond and 6 miles south of Mojave, in southeastern Kern County, California. The major north-south route in the region is State Route (SR) 14, and the major east-west route is SR 58. Both are four-lane highways that carry significant amounts of local and regional through traffic. Paved and unpaved roadways, generally following section lines, are found throughout the Antelope Valley.

The proposed solar facility is located in the western portion of the Mojave Desert. The Kern County portion of the Mojave Desert is to the south and east of the Tehachapi Mountains and north of the San Gabriel Mountains and is dominated by desert vegetation. The topography is mostly flat, but elevations gradually rise toward the west and northwest. The unincorporated community of Rosamond is located to the west of the proposed solar facility along SR 14 in the southern end of the Antelope Valley, near the border with Los Angeles County. The unincorporated community of Mojave is located along SR 14, northwest of the Proposed Action.

Land uses in the region include a mix of vacant land, agriculture, low-density, single-family residential uses, recreational and public facilities, and nature preserves. Urban development is concentrated in Rosamond and Mojave. Renewable energy generation is a significant and growing land use in the desert region, with tens of thousands of acres of wind and solar power plants currently operating, under construction, or planned in the vicinity of the Proposed Action.

The region has experienced significant growth of man-made features, particularly power lines and wind turbines. High-tension transmission corridors, smaller-scale power distribution lines, and wind turbines are found throughout the region. These structures, which can exceed 100 feet in height, dominate views from some viewpoints in the area and limit or interrupt the visibility of hills located in the distance. Other man-made features impacting views in the area include roads and highways, homes, large-scale agricultural development, railroads, airports and related services, and limited industrial development. The area's primary visual character comprises low-lying desert vegetation and scattered farm areas on flat topography. There are few unique features which attract the attention of viewers. However, background views of hills and mountains offer topographic relief from the flat nature of the area.

There are very few light sources in the region because there is a lack of development in the region. Lighting is generally limited to passing vehicular traffic on area roadways and fixtures at the scattered residences in the area. Some street and residential lighting exists along Trotter Avenue. Due to limited development in the region, most roadways in the vicinity of the proposed solar facility are unpaved and few have improvements such as street lights or sidewalks.

Scenic Vistas

For purposes of this evaluation, a scenic vista is defined as a distant public view along or through an opening or corridor that is recognized and valued for its scenic quality. According to the Caltrans California Scenic Highway Mapping System, there are no designated scenic highways within Kern County; however, it contains the following eligible scenic highways within the vicinity of the Proposed Action:

- SR 14: The portion of SR 14 eligible for scenic highway designation is between Mojave and the intersection of U.S. Highway (US) 395 and located approximately 4 miles north of the solar facility site and 2.8 miles east of the gen-tie route options.
- SR 58: The portion of SR 58 eligible for scenic highway status is between the intersection of SR 14 and Interstate 15 near Barstow and approximately 3.2 miles north of the gen-tie route options.

However, since SR 14 and SR 58 are not officially designated, they are not considered scenic highways for this analysis. There are no other identified scenic highways within the vicinity of the project, as identified by the Kern County General Plan.

Local Setting

Proposed Solar Facility Site

The site is covered with low-lying desert vegetation and is generally flat (elevations ranging from approximately 2,545 feet above mean sea level (amsl) to approximately 2,480 feet amsl, with a few dirt roads traversing the site. The perimeter of the project site is partially surrounded by a chain-link barbed-wire fence along Lone Butte Road and Trotter Avenue. There are existing north-south oriented transmission lines along Division Street, through the western portion of the project site. In addition, there are transmission lines located along Trotter Avenue, which turns at a slight diagonal to the southeast and through the eastern portion of the project site. Otherwise, there are no existing structures, paved drives, lighting, or other improvements on the site. There are no natural or man-made water features on the project site; there are ephemeral playas on the project site that are temporarily inundated with water, but these are not considered water features.

The project site is bound by Trotter Avenue to the north and Lone Butte Road to the west. The area directly north and east of the project site includes scattered residential uses, with structures averaging one story in height. Vacant land covered with sparse, low-lying desert vegetation is the predominant land use surrounding the rest of the proposed solar facility site.

The proposed solar facility site has no onsite lighting and none of the streets bordering the site have lighting. There is minimal offsite lighting beyond small fixtures for individual structures. These fixtures are primarily located in the rural residential areas to the north and west of the site. Because of the rural environment in which the site is located, street lighting is rare. Increased amounts of lighting are found closer to larger urbanized communities, such as Mojave.

Proposed Gen-Tie Line Corridor

The alignment options being considered for the gen-tie line would run approximately 13.5 miles northwest from the solar facility and would connect to the Southern California Edison (SCE) Windhub Substation located northwest of the solar facility, or to the Westwind Substation, approximately 0.5 miles north of the SCE Windhub Station. While the individual gen-tie route options are distinct and separate, the project is proposed so that the gen-tie line options would generally follow existing county roads between the proposed solar facility and the substation. Vegetation is absent where the route options traverse graded road shoulders or man-made surfaces or consists of weedy species. The route options traverse largely undeveloped lands with scattered residential uses. However, existing wind turbines, averaging approximately 300 feet in height, are located to the east of the route options and are a dominant feature in the landscape.

Potentially Affected Viewers

Potentially affected viewers in the project viewshed include motorists on SR 14, SR 58, and adjacent roadways as well as local residents.

Motorists

Motorists are the first viewer group identified. Motorists include both local and regional travelers who are familiar with the visual setting and travelers using the roadway on a less regular basis. Most numerous are those traveling on SR14 and SR 58 (both include portions of eligible scenic highways to the north and east of the site), which constitute the primary north-south and east-west transportation corridors within the region and are conduits for a large volume of traffic. However, SR 14 and SR 58 have not been officially designated as state scenic highways; therefore, the proposed gen-tie line and study area would not be visible from an official scenic highway. There are no locally designated scenic corridors identified in the Kern County General Plan within the vicinity of the project.

Views of the solar facility site would include foreground-middleground views from Sierra Highway, Trotter Avenue, Lone Butte Road, Backus Road, and other surrounding local roadways, while middleground to background views would include those from SR 14 and SR 58.

Although some motorists would experience foreground-middleground views of the project site, motorist views are typically brief in duration, since motorists are traveling through the landscape at a higher rate of speed and are focused on the road. For this reason, overall visual sensitivity for motorists ranges from low to moderate.

Residents

The second viewer group consists of residents. Residential views are typically longer in duration and views are one of many factors that influence residential location choice. Residents living in and around adjacent communities, including Mojave, may be exposed to views of the project. Residents (within the foreground-middleground viewing distance) to the project site include those immediately west along Lone Butte Road and those immediately north along Trotter Avenue. Approximately 30 residences border the north side of the site boundary along Trotter Avenue. Overall viewer sensitivity for residents is considered high.

3.1.2 Environmental Consequences

This section describes the environmental consequences relating to aesthetics, light, and glare for the Proposed Action. It describes the methods used to determine the effects of the Proposed Action and lists the thresholds used to conclude whether an effect would be significant.

3.1.2.1 Assessment Methods/Methodology

In general, the potential aesthetic, light, and glare impacts associated with projects are evaluated on a qualitative basis. This visual impact assessment is being used to identify and assess any potential long-term adverse visual impacts on aesthetics and visual resources that might result from implementation of the Proposed Action. This assessment is based on the approved visual assessment practices developed by the BLM (BLM, 1984; 1986). The BLM manages scenic values through its Visual Resource Management (VRM) system, a system that involves inventorying scenic values and establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives. These methods are broadly consistent with the

requirements of both CEQA and BLM NEPA for purposes of environmental review. The method that is being applied to the Proposed Action includes:

- Defining the project and its visual setting by assessing the construction and operation of a typical utility-scale solar facility and associated gen-tie route options, reviewing Google Earth Pro aerial photographs and street-level photography, Kern County geographic information system (GIS) topographic and land use data, and U.S. Geological Survey (USGS) topographic data.
- Conducting a site visit (in October 2014) for the purposes of:
  - Surveying the onsite and surrounding uses to identify sensitive viewers and viewpoints for assessment of potential aesthetic impacts
  - Analyzing the baseline visual quality and character of the identified views
  - Taking photographs from the identified potential KOPs
- Depicting the visual appearance of the project once developed on the site from identified views (described in greater detail under the *Simulation Preparation* section).
- Assessing the project's impacts to KOPs in comparison to their baseline visual quality and character.
- Proposing methods to mitigate any potentially significant visual impacts identified.

The evaluation of the Proposed Action's impacts is based on professional judgment, analysis of the goals and policies in the local land use plans related to visual resources, NEPA regulations, and the significance criteria established by CEQA.

Selection of Key Observation Points

The intent of establishing KOPs is to visualize the physical changes created by the Proposed Action from locations most representative of how the public, particularly sensitive receptors, perceives the affected landscape. The "public" may include highway travelers, travelers on local roads, residents in surrounding private lands, etc. The sensitivity of these diverse user groups to changes in the landscape are influenced by a number of factors, including how prominent the view of the proposed project is (in terms of scale, distance, and angle of observation), the frequency and duration that viewers are exposed to the view, and whether the viewer groups are actively aware of their surroundings or expectant of high-quality views as described in "Potentially Affected Viewers" above.

To represent views that would be experienced from sensitive viewpoints, KOPs were selected. KOPs are single viewpoints that appropriately reflect the impact that implementation of the Proposed Action would have on one or more sensitive receptors. Sensitive receptors near the site fall into two categories: motorists and residents. The inventory of KOPs included three components: (1) identification and photo-documentation of viewing areas and potential KOPs; (2) classification of the visual sensitivity of the KOPs; and (3) an evaluation of project visibility from the KOPs. KOPs were identified based on review of available land use data, a review of aerial maps, and field inspection for the evaluation of visual resources. The process of identifying KOPs

focused on selecting viewpoints that could be used to accurately represent views from a broader range of viewpoints, particularly viewpoints from nearby sensitive receptors.

Three KOPs were selected for visual simulation to create post-development views. The evaluated KOPs are mapped in **Figure 3.1-1**. The KOPs selected for simulation were chosen because they represent views of the Proposed Action that nearby residents and motorists along local roadways would experience. These KOPs are intended to provide a general sense of existing views toward the project site from the nearest sensitive receptors. Views of the site generally decrease when the viewing distance is increased, but the KOPs are considered representative of views from other potential sensitive receptors in the viewshed.

Simulation Preparation

Visual simulations of the Proposed Action from the identified KOPs were prepared to provide a comparison of pre- and post-development conditions. In addition, the simulations provide a context for the qualitative description of the visual changes that would result from the Proposed Action.

Key assumptions in this evaluation are summarized in **Table 3.1-1**.

TABLE 3.1-1
VISUAL QUALITY RATING SYSTEM

	Method/Assumptions
Photography from Key Observation Points	• Photos were taken on a clear day in October 2014. • Visibility: 6+ miles. • Camera: Canon 5D digital camera with a 24 to 35 mm zoom.
Visual Simulation Assumptions	• Solar panels would be up to 12 feet in height and separated by approximately 12 feet. Center posts are placed approximately 19 feet apart. • Panels on a single-axis tracking system were used to show the visual impact.
Methods	Following data gathering phase, the process begins with a determination of proposed camera locations and/or station points. Upon review and approval of camera locations, VisionScape coordinates the engineered site photography and schedules the initial site visit with County staff and/or Planner. This includes identification of reference points with GPS coordinates and specific fields of vision for each view. Concurrently, the modeling team develops an exact computer model of the proposed solar panels that illustrates elevations and natural and finished pads, including existing and surrounding contextual elements such as streets, terrain, pads, and adjacent buildings (where applicable) used as reference. Upon completion of the 3D modeling phase, realistic materials, maps, and textures are then applied. The next phase is assembly, during which the modeling is inserted into photographs taken during the field study using a full-frame camera and camera match technology. 3D pads and boundary outlines are used to situate the panels to the proposed positions as shown in the developer's design. During this process, a computer model camera is aligned with the onsite photography to depict the project setting within each view. Lastly, a proposed landscape concept is applied (where applicable) and final artistic touches are made to ensure accuracy, as well as the look and feel, is consistent with the vision of the project. GPS and camera match technology includes the use of a Trimble GeoXT (Sub-Meter) GPS device and a full-frame digital camera for documenting coordinates at requested station points.
Additional Assumptions	Solar arrays and substations are visually similar regardless of manufacturer or operators.

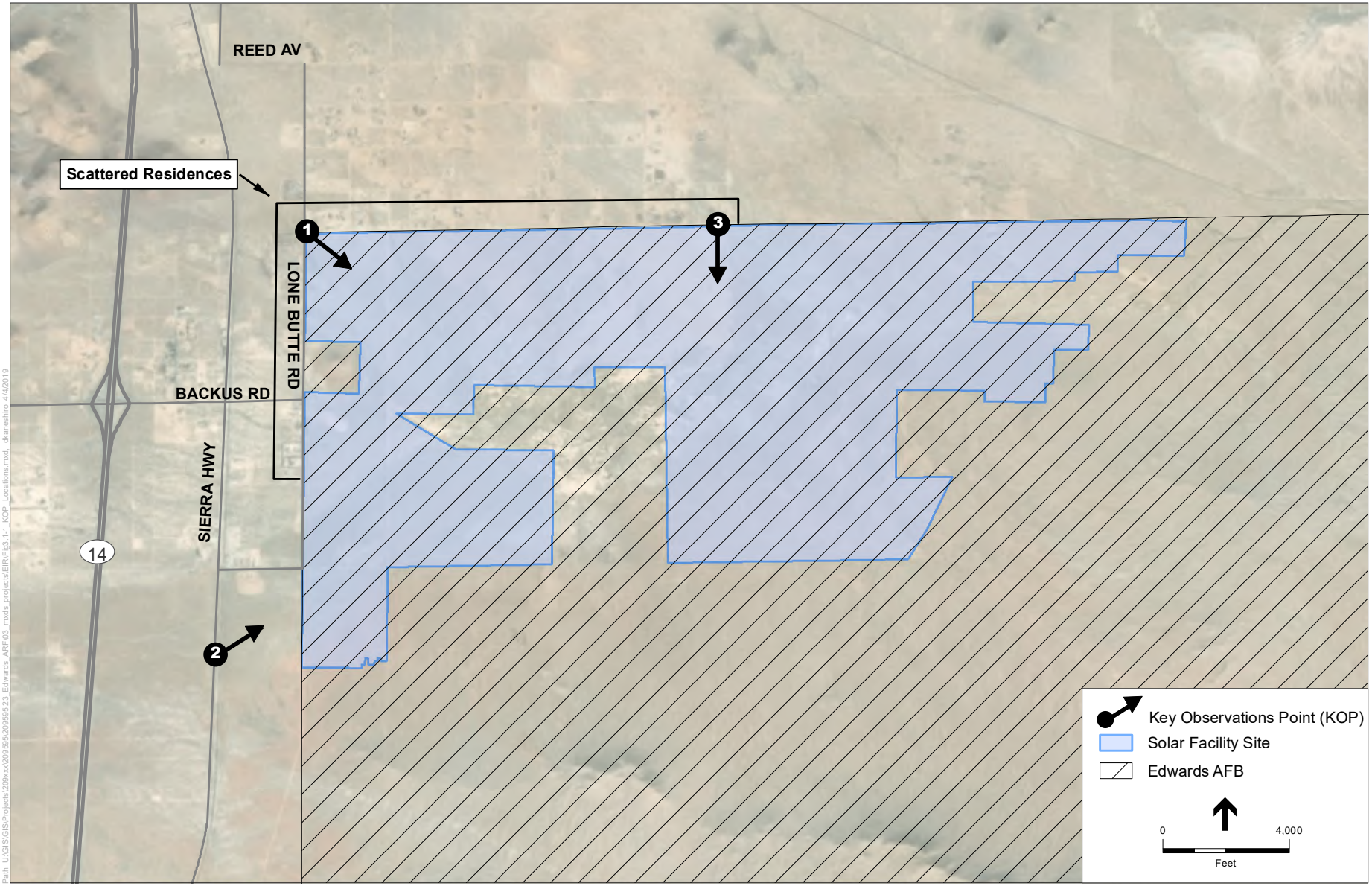


Figure 3.1-1: KOP LOCATIONS

Rating Visual Quality

"Visual quality" is a measure of the visual appeal of a landscape or view. While there are a number of standardized methods for rating visual quality, the "Scenic Quality Rating Criteria" method used by BLM was selected because it allows the various landscape elements that comprise visual quality to be easily quantified and rated with a minimum of ambiguity or subjectivity.

According to this method, visual quality is rated according to the presence and characteristics of seven key factors of the landscape. These factors include landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications.

1. The ***landform*** component of the visual quality rating criteria takes into account the fact that topography becomes more interesting visually as it gets steeper or more massive, or more severely or universally sculptured. Outstanding landforms may be monumental (as found in Yosemite Valley), or they may be exceedingly artistic and subtle (such as certain badlands, pinnacles, arches, and other extraordinary formations).
2. The ***vegetation*** component of the rating criteria gives primary consideration to the variety of patterns, forms, and textures created by plant life. Short-lived displays are given consideration when they are known to be recurring or spectacular. Consideration is also given to smaller-scale vegetation features that add striking and intriguing detail elements to the landscape (e.g., gnarled or wind-beaten trees, Joshua trees).
3. The ***water*** component of the rating criteria recognizes that visual quality is largely enhanced by the presence of water in scenery, as it is that ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score for the water component.
4. The ***color*** component of the visual quality rating criteria considers the overall color(s) of the basic components of the landscape (soil, rock, vegetation, etc.). Key factors that are used when rating the color of scenery are variety, contrast, and harmony.
5. The ***adjacent scenery*** component of the rating criteria takes into account the degree to which scenery outside the view being rated enhances the overall impression of the scenery under evaluation. The distance of influence for adjacent scenery normally ranges from 0 to 5 miles, depending on the characteristics of the topography, the vegetation cover, and other such factors. This factor is generally applied to views that would normally rate very low in score, but the influence of the adjacent high visual quality would enhance the visual quality and raise the score.
6. The ***scarcity*** component of the visual quality rating criteria provides an opportunity to give added importance to one or all of the scenic features that appear to be relatively unique or rare within a region. There may also be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area. Often, it is a number of not so spectacular elements in the proper combination that produces the most pleasing and memorable scenery—the scarcity factor can be used to recognize this type of area and give it the added emphasis it should have.
7. The ***cultural modifications*** component of the visual quality rating criteria takes into account any man-made modifications to the landform, water, vegetation, and/or the addition of man-made structures. Depending on their character, these cultural modifications may detract from the scenery in the form of a negative intrusion or they may complement and improve the scenic quality of a view.

Based on the above key factors, a visual quality rating system has been developed. Views are rated numerically and a total score of visual quality can be tabulated based on the criteria shown in **Table 3.1-2**. The highest score that can be determined for any single criterion is 5, with the exception of criteria related to cultural modifications, in which the highest score could be 2. According to BLM's rating system, there are a total of 32 points possible (BLM, 1986). Views that score a total of 19 points or more are typically considered very high in visual quality. Views that score a total of 15 to 18 points are typically considered to have a high level of visual quality. Views that score a total of 12 to 15 points are typically considered to have an above-average level of visual quality. Finally, views that score a total of 11 points or less are typically considered to have average visual quality. See Table 3.1-2 for the point values associated with the various criteria.

TABLE 3.1-2
SCENIC QUALITY INVENTORY AND EVALUATION CHART

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

TABLE 3.1-2
SCENIC QUALITY INVENTORY AND EVALUATION CHART

Key Factors	Rating Criteria and Score					
Cultural Modifications	Modifications add favorably to visual variety while promoting visual harmony.		Modifications add little or no visual variety to the area, and introduce no discordant elements.		Modifications add variety but are very discordant and promote strong disharmony.	
	Score	**2**	**Score**	**0**	**Score**	**-4**

An important premise of this evaluation method is that views with the most variety and most harmonious composition have the greatest scenic value. Another important concept is that man-made features within a landscape do not necessarily detract from the scenic value. In fact, certain man-made features that complement the natural landscape may actually enhance the visual quality. In making this determination, it is therefore important to assess project effects relative to the "visual character" of the project setting. Visual character is qualitatively defined by four primary components: form, line, color, and texture.

Projects that create a high level of contrast to the existing visual character of a project setting are more likely to generate adverse visual impacts due to visual incompatibility. Conversely, projects that create a low level of contrast to the existing visual character are less likely to generate adverse visual impacts due to inherent visual compatibility. On this basis, project modifications are quantified and evaluated for impact assessment purposes. It should be noted that the KOPs selected for the project include views of the proposed solar facility site, and not the proposed gen-tie route options and study area (a photograph of a standard monopole anticipated for construction of the gen-tie line can be found in Figure 3.1-8). Therefore, the analysis and ratings from the respective KOPs is for the proposed solar facility.

By comparing the difference in visual quality ratings from the pre-development ("before" condition) to post-development ("after" condition) visual conditions, the severity of project related visual impacts can be quantified. However, in some cases, visual changes caused by projects may actually have a beneficial visual effect and may enhance scenic quality. The following designations are used to rank the significance of project impacts according to the pre- and post-development differences in numerical visual quality scores:

- **Significant and Unavoidable Impact:** Any impact that could potentially lower the visual quality of an identified sensitive viewpoint by 2 points or more, and for which no feasible or effective mitigation can be identified.
- **Less-than-Significant Impact with Mitigation Incorporated:** Any impact that could potentially lower the visual quality of an identified sensitive viewpoint by 2 points or more, but can be reduced to less than 2 points with mitigation incorporated. Therefore, specific mitigation measures are provided to reduce the impact to a less-than-significant level.
- **Less-than-Significant Impact:** Any impact that could potentially lower the visual quality of an identified sensitive viewpoint by 1 point or less. In visual impact analysis, a less-than-significant impact usually occurs when a project's visual modifications can be seen but do not dominate, contrast with, or strongly degrade a sensitive viewpoint.

- **No Impact:** The project would not have an impact from an identified sensitive viewpoint. In visual impact analysis, there is no impact if the project's potential visual modifications cannot be seen from an identified sensitive viewpoint.

3.1.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, a significant impact to aesthetics would occur it would result in any effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

The lead agency determined in the NOP (see Appendix A) that the following environmental issue areas would result in no impacts or less-than-significant impacts and were therefore scoped out of requiring further review in this EIS/EIR. Please refer to Appendix A of this EIS/EIR for a copy of the NOP and additional information regarding these issue areas.

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

3.1.3 Analysis of Environmental Effects

3.1.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Construction

Construction of the Proposed Action would cause direct temporary visual impacts due to the presence of equipment, materials, and workforce. These impacts would occur throughout the development area including the proposed gen-tie routes. Construction would involve the use of cranes, other heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction would include site clearing and grading, construction of the solar generating facilities, construction of the gen-tie and communications line, as well as site cleanup and restoration. An increase in temporary construction traffic would also occur, as described in Section 3.15, *Transportation*. Indirect impacts to aesthetics during construction would include grading activities generating dust clouds, which can be visually distracting if not controlled properly. Construction activities at the solar facility site would be visible from SR 14, Sierra Highway, and Trotter Avenue. The solar facility site and gen-tie line would be under active construction during the 24-month construction period. It is anticipated that construction activity would take place during the day, Monday through Friday. However, in order to meet schedules or

avoid work during the hottest temperatures of the day, non-daylight work may be necessary. Overall, construction-related impacts would be temporary and would not result in an adverse effect to aesthetic resources. To ensure that adverse construction lighting effects do not occur, Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, below, have been recommended to reduce impacts associated with potential night lighting.

Operation and Maintenance

To determine whether the Proposed Action would substantially degrade the existing visual quality of the site during the operations and maintenance phase, this analysis compares the existing visual setting with simulated portrayals of the post-project visual conditions from selected KOPs. These KOPs are representative of views that would be experienced from nearby sensitive receptor locations. As discussed under "Selection of Key Observation Points," the process of identifying KOPs focused on selecting viewpoints that could be used to accurately represent views from a broader range of viewpoints, particularly viewpoints from area sensitive receptors. Visual simulations are provided in **Figures 3.1-2** through **3.1-7**. The KOPs and their associated sensitive receptor locations are described in **Table 3.1-3**.

TABLE 3.1-3
KOPS AND SENSITIVE RECEPTORS FOR ALTERNATIVE A

Sensitive Receptor		KOP #
1	Motorists driving south on Lone Butte Road and residences to the north and east	1
2	Motorists driving north on Sierra Highway	2
3	Motorists driving south on 20th Street and residences to the north	3

The visual quality of the project site and surrounding areas generally consists of open space with desert vegetation. Expansive views of hills to the north and west are visible from much of the area. The visual character is largely rural and undeveloped, with scattered residential, commercial, and industrial uses such as roads, wind power generation, substations, and transmission lines. Sensitive receptors in the vicinity of the site include motorists and residences. The pre- and post-development views are presented in Figures 3.1-2 through 3.1-4. A photograph of a standard monopole anticipated for construction of the gen-tie line can be found in **Figure 3.1-8**.

Existing (pre-development) view

Simulated (post-development) view

Figure 3.1-2: ALTERNATIVE A SIMULATION OF KOP 1
VIEW LOOKING SE FROM LONE BUTTE RD AND TROTTER AVE

Existing (pre-development) view

Simulated (post-development) view

Figure 3.1-3: ALTERNATIVE A SIMULATION OF KOP 2 VIEW LOOKING NORTHEAST FROM SIERRA HIGHWAY

Existing (pre-development) view

Simulated (post-development) view

Figure 3.1-4: ALTERNATIVE A SIMULATION OF KOP 3 VIEW LOOKING SOUTH FROM TROTTER AVENUE AND 20TH STREET

Existing (pre-development) view

Simulated (post-development) view

Figure 3.1-5: ALTERNATIVE B SIMULATION OF KOP 1 VIEW LOOKING SE FROM LONE BUTTE RD AND TROTTER AVE

Existing (pre-development) view

Simulated (post-development) view

Figure 3.1-6: ALTERNATIVE B SIMULATION OF KOP 2 VIEW LOOKING NORTHEAST FROM SIERRA HIGHWAY

Existing (pre-development) view

Simulated (post-development) view

Figure 3.1-7: ALTERNATIVE B SIMULATION OF KOP 3
VIEW LOOKING SOUTH FROM TROTTER AVENUE AND 20TH STREET

Figure 3.1-8: TYPICAL STEEL MONOPOLE TOWER

The proposed project would also include construction of an overhead 230 kV gen-tie line from the proposed solar facility to a point of interconnection where power generated by the project can be delivered to the grid. Gen-tie lines would be carried overhead on utility poles ranging from 100 to 180 feet in height and would cover a total approximate distance of a 16 miles. The presence of these vertical elements would add man-made elements in the landscape that currently do not exist, resulting in significant aesthetic impacts. Mitigation Measures MM 3.1-1a through MM 3.1-3a for the solar facility portion of the project site, and Mitigation Measures MM 3.1-1b through MM 3.1-3b for the gen-tie portion of the site, are incorporated to reduce visual impacts. However, because there are no feasible mitigation measures that can be implemented to preserve the existing open space landscape character at the project site while at the same time developing a solar energy facility, impacts to visual resources would be significant and unavoidable, despite implementation of these mitigation measures.

KOP 1 – View Looking Southeast from the intersection of Lone Butte Road and Trotter Avenue

Figure 3.1-2 depicts the view looking southeast from the intersection of Lone Butte Road and Trotter Avenue at a distance of approximately 75 feet from the project boundary, in the foreground-middleground distance zone. The existing view shows an undeveloped desert landscape that is relatively flat and contains low-lying shrub vegetation with a few Joshua trees. An existing chain-link fence and transmission line are in the foreground. Hills and mountains are visible in the background, but are partially screened by the chain-link fence, which rises above the ridgeline in places. However, the chain-link fence is transparent enough that hills and mountains are visible. The simulation reveals that the project would be dominant in the foreground-middleground and would replace the existing natural and undeveloped desert landscape, and would partially block the view of the mountains in the background. Although it is not depicted in the simulation, the proposed substation and gen-tie line would also be visible from KOP 1, which (in combination with the proposed solar arrays) would attract attention and dominate the landscape. A photograph of a standard monopole anticipated for construction of the gen-tie line can be found in Figure 3.1-8). The simulation from this KOP represents views that motorists and nearby residents viewing the Proposed Action would experience along the northwestern boundary. The viewer is at an elevation that is relatively level with the Proposed Action site; while views could be brief for motorists, they would be of longer duration for adjacent residents. Since the Proposed Action would create dominant contrasting features in the landscape, as viewed from KOP 1, an adverse effect to visual resources would occur.

KOP 2 – View Looking Northeast from Sierra Highway

Figure 3.1-3 depicts the view looking northeast from Sierra Highway at a distance of approximately 0.5 miles from the project boundary, in the foreground-middleground viewing distance. The simulation from this KOP represent views that motorists viewing the Proposed Action from the western boundary would experience. The existing view shows a largely undeveloped landscape that is relatively flat and contains low-lying shrub vegetation. A dark-colored horizontal band created by the railroad lies parallel to the road and is irregularly broken up, or screened, by shrub vegetation. A tan-and-cream-colored building surrounded by medium-height trees is on the left side of the view. Wooden fence posts parallel the railroad tracks and transmission line poles are visible in the distance. There are also low-lying hills to the northeast, but they are not formidable enough

to create an enclosed landscape. The simulation reveals that although the viewer is at an elevation that is relatively level with the project site, the Proposed Action would not be visible, and no changes would occur to existing views. The solar site would not be observable after development. Therefore, the Proposed Action as viewed from KOP 2 would not create an adverse effect to visual resources.

KOP 3 – View Looking South from Trotter Avenue and 20th Street

Figure 3.1-4 depicts the view looking south from Trotter Avenue and 20th Street at a distance of approximately 30 feet from the Proposed Action boundary, in the foreground-viewing distance. The simulation from this KOP represent views that motorists and nearby residents viewing the Proposed Action would experience along the northern boundary. The existing view shows an existing chain-link fence and transmission pole are in the foreground. An undeveloped desert landscape is relatively flat and contains low-lying shrub vegetation with a few Joshua trees is seen beyond the fence, while hills and mountains are visible in the foreground-background viewing distances, but are partially screened by the chain-link fence, which rises above the ridgeline. However, the chain-link fence is transparent enough that they are visible. The simulation reveals that the project would be dominant in the foreground-middleground and would replace the existing natural and undeveloped desert landscape, and partially block the view of the mountains in the background. The viewer is at an elevation that is relatively level with the Proposed Action and while views from KOP 3 could be brief for motorists, they would be of longer duration for adjacent residents. The Proposed Action, as viewed from KOP 3, would create a dominant contrasting feature in the landscape which would create an adverse effect to visual resources.

Light

As described in more detail in Chapter 2, *Proposed Action, Project Description, and Alternatives*, of this EIS/EIR, the proposed solar facility would include safety and security lighting. The lighting system for the solar facility provided for operation and maintenance personnel would be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting would be provided at the electrical enclosures, onsite buildings, and the main access road entrance. Lighting would be limited so that light spillover on the adjacent properties would be minimal. If lighting at individual solar panels or other equipment is needed for night maintenance, portable lighting would be used. All lighting would be directed downward and shielded to focus illumination on the desired areas, in compliance with the Kern County Dark Skies Ordinance Restrictions on light fixture height are also imposed by the ordinance. If improperly designed or oriented, such lighting may result in light trespass that falls outside the boundaries of the site. Under particularly adverse conditions, spillover lighting causes annoyance, discomfort, or loss in visual performance because of its intensity, direction, or source type and visibility.

Effects resulting from lighting would be minimized through compliance with all development standards, the Kern County Zoning Ordinance, and the goals, policies, and implementation measures of the Kern County General Plan. Compliance with the Dark Skies Ordinance would be required. In addition, the implementation of Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, would minimize the potential for spillover lighting to adversely affect residents and motorists to reduce adverse effects.

Glare

Reflection of sunlight is the primary potential producer of glare from reflecting off the glass surfaces of solar panels. The properties of glare are further discussed in Chapter 3.4, *Airspace Management and Use*, of this EIS/EIR.

As described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, of this EIS/EIR, the Proposed Action may use trackers. Trackers allow the panels to follow the sun in its path from east to west across the southern sky as the day progresses. These devices orient the solar panels perpendicular to the incident solar radiation, thereby maximizing solar cell efficiency and potential energy output. Some of these tracking devices use GPS technology, which enables the tracking to be extremely accurate, and are capable of positioning the array so that the incident rays would be at or very near a surface normal (perpendicular angle). During midday conditions, when the sun is high in the sky, the law of reflection indicates that the reflected ray would be at an equally low angle and reflected in a direction toward the light source or back into the atmosphere away from receptors on the ground. When the sun is low on the horizon (near dawn or dusk), the sun's angle in the sky is low; however, reflected rays would still be directed away from ground-level receptors.

As discussed in Section 3.4.2.2 of this EIR, the panels would not be expected to cause visual discomfort or impairment of vision for residents because the panels are designed to absorb as much sunlight as possible and therefore would have minimal reflectivity. The type of glare that could be expected in the most extreme conditions, when the sun is low in the sky, is a level of veiling reflection that may cause viewers to be less able to distinguish levels of contrast, but not cause a temporary loss of vision. Additionally, for some residents in the viewshed of the proposed project, glare effects would be further reduced by intervening elements, such as vegetative screening created by mature landscape trees, ornamental planting, and other homes or structures, which would obstruct views of the panels. Therefore, the Proposed Action would not result in adverse effects related to glare for residences in the vicinity of the Proposed Action.

Similarly, and also because of their low reflectivity, the panels would not be expected to cause visual impairment for motorists on area roadways. Effects on eastbound motorists would likely be greatest in the early evening hours, when the sun is at its lowest arc in the western horizon. Glare would have its greatest impact on westbound travelers in the early morning hours, when the sun is rising in the east. Nonetheless, regardless of their position relative to the sun and the time of day, the panels would not be expected to cause visual impairment for motorists. Therefore, the Proposed Action would not result in adverse effects related to glare affecting motorists.

Other glare effects could result if onsite structures, such as the substations, are covered with reflective materials. However, implementation of Mitigation Measure MM 3.1-2a would minimize such glare effects for the solar facility portion of the proposed project. As discussed in Chapter 3.4, *Airspace Management*, the FAA and the Air Force expects the proposed solar panels to have little, if any, impact with respect to glare. Because of the inherently low reflectivity of PV panels, in addition to compliance with the goals, policies, and implementation measures of the Zoning Ordinance and General Plan and with implementation of Mitigation Measure MM 3.1-2a, the Proposed Action would not have an adverse effect relating to glare affecting motorists and residents.

Decommissioning

At the completion of the 35-year lease for solar generating facilities, Air Force may renew the lease or require the developer to decommission the solar facility. The solar modules, gen-tie line and all other improvements would be dismantled and removed. Effects from decommissioning facilities are typically similar to those described for construction of the facilities. However, if the site is not restored, the removal of facilities can create a strong visual contrast from grading, disturbed soil areas, in comparison to undisturbed soil areas in the vicinity of the project site. These changes would result in visually dominant and contrasting features at the site, creating an adverse effect to visual resources. In addition, revegetation in this desert region is difficult and generally of limited success, thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a long period of time. However, Mitigation Measures MM 3.1-2b for the gen-tie portion of the project site, and Mitigation Measure MM 3.5-4a for the solar facility portion of the project, would require revegetation plans and are recommended to achieve site restoration over a long period. Because restoration activities would occur over an unknown long period of time, decommissioning of the Proposed Action would create an adverse effect to visual resources.

CEQA: Impact Significance Determination

Impact 3.1-1: Substantially degrade the existing visual character or quality of the site and its surroundings.

As noted in Section 3.1.4, *Environmental Consequences*, a modified version of the BLM VRM method was used for visual assessment of the entire project site (BLM, 1984). The description of impacts resulting from construction, operation, and decommissioning are discussed in the previous NEPA section, in addition to the KOPs. The Visual Quality Rating Analysis assesses the pre- and post-development views from each KOP to determine the level of impact significance for CEQA is included in **Tables 3.1-4** through **3.1-6**.

TABLE 3.1-4
VISUAL QUALITY RATING ANALYSIS – KOP 1

Sensitive Receptor: Motorists to the north, on Lone Butte Road and Trotter Avenue, residents to the north and east
Pre-development and post-development condition in Figure 3.1-2

Rated Feature	Pre-Development Condition	Post-Development Score	Difference in Scores	Impact Significance
Landform	2	1	1	Less-Than-Significant
Explanation:	Site and vicinity are flat, but hills in the background form an important element of the view.	The proposed project would not modify the area's terrain.		
Detail:	In both pre- and post-development views, flat landforms predominate with hills visible in the background. Because there would be no significant change to the landforms on the project site.			
Vegetation	3	1	2	**Potentially Significant**
Explanation:	Joshua trees add interesting form and texture. Low-lying desert vegetation is sparse and intermixed with barren desert lands.	The project would remove and obscure existing vegetation in the foreground-middleground.		

TABLE 3.1-4
VISUAL QUALITY RATING ANALYSIS – KOP 1

Sensitive Receptor: Motorists to the north, on Lone Butte Road and Trotter Avenue, residents to the north and east
Pre-development and post-development condition in Figure 3.1-2

Rated Feature	Pre-Development Condition	Post-Development Score	Difference in Scores	Impact Significance
Detail:	Both the pre- and post-development views show Joshua trees, which add interest in form and texture to sparse, low-lying desert vegetation intermixed with barren desert lands. Vegetation forms an important element of the views from this viewpoint, and the project would remove all of the vegetation within the view.			
Water	0	0	0	No Impact
Explanation:	No water is present on the site or in the vicinity.	No water would be introduced to the site or their vicinity.		
Detail:	Neither pre- nor post-development views include any water features.			
Color	2	1	1	Less-Than-Significant
Explanation:	Generally muted colors with some variety.	The project would appear as a darker element in the foreground-middleground.		
Detail:	The pre-development view shows muted tones of gold, gray, and green. The project would add a monotone dark gray color with elements of silver and light gray.			
Adjacent Scenery	2	1	1	**Potentially Significant**
Explanation:	Adjacent scenery moderately enhances the view through the presence of hills to the southeast.	Adjacent scenery, including hills to the southeast, would be partially obscured by the solar panels and substation.		
Detail:	Adjacent scenery consists of flat lands with mixed desert vegetation in the foreground-middleground and hills in the background. The proposed project would partially block views of adjacent scenery, resulting in a potentially significant impact.			
Scarcity	1	1	0	Less-Than-Significant
Explanation:	Similar viewsheds throughout the region. No unique or unusual aspects.	Viewshed would be modified by industrial development.		
Detail:	Views offered by the pre-development are typical of the Antelope Valley area and are not unique or unusual; therefore, modifying the existing conditions to implement the project would not result in significant change in the scarcity criterion.			
Cultural Modifications	-1	-4	3	**Potentially Significant**
Explanation:	Man-made modifications in this view include roads, transmission lines, and chain-link fence.	The project would add manmade modifications to the viewshed, including a solar field, substation and 230 kV transmission line that would add to manmade modifications. This would continue to be discordant and disharmonious with existing views.		
Detail:	Cultural modifications have a slightly negative impact on the pre-development view. Features such as the transmission line and chain-link fence contribute to the impact. These elements are somewhat discordant and disharmonious with the characteristic landscape. The proposed project would introduce geometric forms that are more vertical and obstructive to the surrounding scenery in comparison to the pre-development condition.			
Totals:	9	1	8	**Potentially Significant**

TABLE 3.1-5
VISUAL QUALITY RATING ANALYSIS – KOP 2

Sensitive Receptor: Motorists to the south, on Sierra Highway pre-development and post-development condition on Figure 3.1-3

Rated Feature	Pre-Development Condition	Post-Development Score	Difference in Scores	Impact Significance
Landform	2	1	1	Less-Than-Significant
Explanation:	Site and vicinity are flat, with varied terrain (hills) in the background.	The proposed project would not modify the area's terrain.		
Detail:	In both pre- and post-development views, flat landforms predominate with hills visible in the background. Because there would be no significant change to the landforms on the project sites.			
Vegetation	2	2	0	Less-Than-Significant
Explanation:	Vegetation is a mix of low-lying desert shrubs and trees at a residence/building.	Due to the distance of the project from KOP 2, the project would not have a substantial impact on views of vegetation. The project would replace vegetation on the site with solar fields and ancillary facilities, but it would not be immediately perceptible to motorists.		
Detail:	Both the pre- and post-development views show low-lying desert shrub vegetation. The proposed project would remove all of the vegetation within the project area, but the vegetation in the immediate foreground would remain intact.			
Water	0	0	0	No Impact
Explanation:	No water is present on the site or in the vicinity.	No water would be introduced to the site or their vicinity.		
Detail:	Neither pre- nor post-development views include any water features.			
Color	1	1	0	Less-Than-Significant
Explanation:	Generally muted colors with little variety.	Because of the distance of the project from KOP 2, the project would not have a substantial effect on color, and would remain a muted gray tone in the background.		
Detail:	Both pre- and post-development views show muted colors and little variety or contrast. The existing desert vegetation is a consistent color which does not create contrast or variety. In the post-development view, there is little to no change due to the project's distance and viewing angle from KOP 2.			
Adjacent Scenery	2	2	0	Less-Than-Significant
Explanation:	Adjacent scenery moderately enhances the view through the presence of hills to the northeast.	Adjacent scenery, including hills to the northeast, would remain visible.		
Detail:	Adjacent scenery, including hills in the background, is visible in both pre- and post-development views.			
Scarcity	1	1	0	Less-Than-Significant
Explanation:	Similar viewsheds throughout the region. No unique or unusual aspects.	Viewshed would be modified by industrial development.		

TABLE 3.1-5
VISUAL QUALITY RATING ANALYSIS – KOP 2

Sensitive Receptor: Motorists to the south, on Sierra Highway pre-development and post-development condition on Figure 3.1-3

Rated Feature	Pre-Development Condition	Post-Development Score	Difference in Scores	Impact Significance
Detail:	Views offered by the pre-development are typical of the Antelope Valley area and are not unique or unusual; therefore, modifying the existing conditions to implement the project would not result in significant changes to the scarcity criterion.			
Cultural Modifications	-1	-1	0	Less-Than-Significant
Explanation:	Manmade modifications in this view include roads, railroad line, transmission lines, a wooden post fence, and a building.	Although the project would add cultural modifications to the site, here are no substantial changes seen from this view due to the KOP's distance and viewing angle from the project.		
Detail:	The pre-development view shows cultural modifications that add little or no visual variety to the area, and very few discordant elements. The post-development view, in comparison, is the same from KOP 2's viewing angle, as cultural modifications from the proposed project cannot be seen.			
Totals:	7	6	1	**Less-Than-Significant**

TABLE 3.1-6
VISUAL QUALITY RATING ANALYSIS – KOP 3

Sensitive Receptor: Motorists and residents to the north, on Trotter Avenue and 20th Street pre-development and post-development condition on Figure 3.1-4

Rated Feature	Pre-Development Condition	Post-Development Score	Difference in Scores	Impact Significance
Landform	2	1	1	Less-Than-Significant
Explanation:	Site and vicinity are flat, but hills in the background form an important element of the view.	The Proposed Action would not modify the area's terrain.		
Detail:	In both pre- and post-development views, flat landforms predominate with hills visible in the background. There would be no significant change to the landforms on the project sites.			
Vegetation	3	1	2	**Potentially Significant**
Explanation:	Joshua trees add interesting form and texture. Low-lying desert vegetation is sparse and intermixed with barren desert lands.	The project would remove and obscure existing vegetation in the foreground-middleground.		
Detail:	Both the pre- and post-development views show Joshua trees, which add interest in form and texture to sparse, low-lying desert vegetation intermixed with barren desert lands. Vegetation forms an important element of the views from this viewpoint, and the project would remove all of the vegetation within the view.			
Water	0	0	0	No Impact

TABLE 3.1-6
VISUAL QUALITY RATING ANALYSIS – KOP 3

Sensitive Receptor: Motorists and residents to the north, on Trotter Avenue and 20th Street pre-development and post-development condition on Figure 3.1-4

Rated Feature	Pre-Development Condition	Post-Development Score	Difference in Scores	Impact Significance
Explanation:	No water is present on the site or in the vicinity.	No water would be introduced to the site or their vicinity.		
Detail:	Neither pre- nor post-development views include any water features.			
Color	2	1	1	Less-Than-Significant
Explanation:	Generally muted colors with some variety.	The project would appear as a darker element in the foreground-middleground.		
Detail:	The pre-development view shows muted tones of gold, gray, and green. The project would add a monotone dark gray color with elements of silver and light gray.			
Adjacent Scenery	3	1	2	**Potentially significant**
Explanation:	Adjacent scenery moderately enhances the view through the presence of hills to the southeast.	Adjacent scenery, including hills to the southeast, would be partially obscured by the solar panels and substation.		
Detail:	Adjacent scenery consists of flat lands with mixed desert vegetation in the foreground-middleground and hills in the background. The Proposed Action would partially block views of adjacent scenery.			
Scarcity	1	1	0	Less-Than-Significant
Explanation:	Similar viewsheds throughout the region. No unique or unusual aspects.	Viewshed would be modified by industrial development.		
Detail:	Views offered by the pre-development are typical of the Antelope Valley area and are not unique or unusual; therefore, modifying the existing conditions to implement the project would not result in a substantial change to the scarcity criterion.			
Cultural Modifications	-1	-4	3	**Potentially Significant**
Explanation:	Man-made modifications in this view include roads, transmission lines, and chain-link fence.	The project would add man-made modifications to the viewshed, including a solar field that would add to man-made modifications. This would continue to be discordant and disharmonious with existing views.		
Detail:	Cultural modifications have a slightly negative impact on the pre-development view. Features such as the transmission line and chain-link fence contribute to the impact. These elements are somewhat discordant and disharmonious with the characteristic landscape. The proposed project would introduce geometric forms that are more vertical and obstructive to the surrounding scenery in comparison to the pre-development condition.			
Totals:	10	1	9	**Potentially Significant**

Construction

As described in the NEPA analysis above, direct impacts associated with construction would include the presence of construction equipment, materials, workforce/traffic, as well as grading and vegetation clearing activities; indirect impacts would include grading activities generating dust clouds, which can be visually distracting if not controlled properly. Construction activities would be visible from SR 14, Sierra Highway, Trotter Avenue, and along the selected gen-tie route during the 24-month construction period. However, overall construction-related impacts would be temporary. It is anticipated that construction activity would take place during the day, Monday through Friday. However, nighttime work may be necessary. To reduce temporary construction lighting impacts, Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site have been recommended; impacts associated with construction of the project would be less than significant.

Operation and Maintenance

Although implementation of the project (specifically the solar facility) would introduce an industrial visual character into the viewshed as seen from all the KOPs for the life of the project, as shown in Tables 3.1-4 through 3.1-6, all KOPs have an "average" visual quality rating according to the using the BLM rating scale; as discussed in the "Rating Visual Quality" section, views with a pre-development score of 11 or fewer points are considered average. As shown in Tables 3.1-4 and 3.1-6, implementation of the project would result in potentially significant impacts as viewed from KOPs 1 and 3, resulting from a substantial change to the site's visual quality and visual character. Specifically, the project site's visual quality, currently undeveloped desert and rural lands, would be altered by the addition of solar panels, mechanical equipment, transmission lines, substations, and other facilities on up to 4,000 acres. Site specific impacts to visual character would be significant and unavoidable.

The proposed project would also include construction of an overhead 230 kV gen-tie line from the proposed solar facility. Gen-tie lines would be carried overhead on utility poles ranging from 100 to 215 feet in height and would cover a total approximate distance of a 14 miles. The presence of these vertical elements would add man-made elements in the landscape that currently do not exist, resulting in significant aesthetic impacts. Mitigation Measures MM 3.1-1a through MM 3.1-3a for the solar facility portion of the project site, and Mitigation Measures MM 3.1-1b through MM 3.1-3b for the gen-tie portion of the site, are incorporated to reduce visual impacts. However, because there are no feasible mitigation measures that can be implemented to preserve the existing open space landscape character at the project site while at the same time developing a solar energy facility, impacts to the existing visual character or quality of the site and its surroundings would be significant and unavoidable, despite implementation of these mitigation measures.

For site specific visual impacts, Mitigation Measure MM 3.1-2b would incorporate landscaping as outlined in a revegetation plan for the gen-tie portion of the project site, and Mitigation Measure MM 3.1-3a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-2b for the gen-tie portion of the site, would require the developer to clear stockpiled debris from the project area at least twice per year.

Decommissioning

As described above in the NEPA analysis, if the lease for solar generating facilities is not renewed, the developer may be required to decommission the solar facility. Removal of the solar facilities, gen-tie line, related infrastructure and grading can result in visually dominant and contrasting features if the site is not restored. Although successful revegetation can be difficult to achieve, Mitigation Measure MM 3.1-1b, which require a revegetation plan for the gen-tie portion of the site, and Mitigation Measure MM 3.5-4a (Vegetation Salvage and Restoration Plan) are recommended to achieve site restoration for the solar facility portion of the site, over a long period of time. Because restoration activities would occur over an unknown long period of time, impacts would be significant and unavoidable.

Mitigation Measures

Implement Mitigation Measures MM 3.1-1a through MM 3.1-3a, MM 3.1-1b through MM 3.1-3b, and MM 3.5-4a (see Sections 3.1.5 and 3.5.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be significant and unavoidable.

Impact 3.1-2: Create a new source of substantial light or glare that would adversely affect day or nighttime views in this area.

Construction, Operation and Maintenance and Decommissioning

Regarding night lighting conditions—as well as daytime glare conditions—"light" refers to artificial light emissions, or the degree of brightness, generated by a given source. The Illuminating Engineering Society of North America (IES, 2000) defines "glare" as the sensation produced by luminance in the visual field that is sufficiently greater than the luminance to which the eye has adapted to cause annoyance, discomfort, or loss of visual performance and visibility.

As discussed under the r analysis, lighting provided at the electrical enclosures, onsite buildings, and the main access road entrance to the solar facility, in addition to lighting for the solar facility provided for operation and maintenance personnel would be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting would be directed downward, shielded and limited so that light spillover on the adjacent properties would be minimal. If lighting at individual solar panels or other equipment is needed for night maintenance, portable lighting would be used. However, under particularly adverse conditions, spillover lighting causes annoyance, discomfort, or loss in visual performance because of its intensity, direction, or source type and visibility. All lighting would be to focus illumination on the desired areas, in compliance with the Kern County Dark Skies Ordinance. Impacts resulting from lighting would be minimized through compliance with all development standards, the Kern County Zoning Ordinance, and the goals, policies, and implementation measures of the Kern County General Plan. Compliance with the Dark Skies Ordinance would be required. In addition, the implementation of Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, would minimize the potential for spillover lighting to adversely affect residents and motorists to a less-than-significant level.

With respect to glare impacts, the panels would not be expected to cause extreme visual discomfort or impairment of vision for residents or motorists because the panels are designed to absorb as much sunlight as possible and therefore would have minimal reflectivity. The type of glare that could be expected in the most extreme conditions, when the sun is low in the sky, is a level of veiling reflection that may cause viewers to be less able to distinguish levels of contrast, but would not cause a temporary loss of vision. Implementation of Mitigation Measure MM 3.1-2a would further minimize glare impacts from the solar facility to a less-than-significant level.

Mitigation Measures

Implement Mitigation Measures MM 3.1-1a, MM 3.1-3b, and MM 3.1-2a (see Section 3.1.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.1.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Similar to Alternative A, construction of Alternative B would cause temporary visual impacts due to the presence of equipment, materials, and workforce. The types of equipment used and construction activities performed would be the same as those proposed under Alternative A. Like Alternative A, construction activities may be visible from SR 14, Sierra Highway, Trotter Avenue, Lone Butte Road, and along the selected gen-tie route. However, Alternative B would only include construction of solar arrays on the western boundary of the site (along Lone Butte Road and eastern Trotter Avenue). The closest sensitive receptors to the solar facility under Alternative B would be approximately 350 feet, in comparison to approximately 100 feet under Alternative A. Overall, construction-related impacts would be temporary, and views of construction equipment and vehicles from the KOPs would be limited to the immediate vicinity of the site. As required for Alternative A, in order to ensure that adverse construction night lighting effects do not occur under Alternative B, Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, have been recommended to reduce impacts associated with night lighting.

Operation and Maintenance

The following KOPs are the same as those used for Alternative A and are representative of views that would be experienced from numerous sensitive receptor locations. As discussed under "Selection of Key Observation Points," the process of identifying KOPs focused on selecting viewpoints that could be used to accurately represent views from a broader range of viewpoints, particularly viewpoints from area-sensitive receptors, specifically motorists and residents. Visual simulations of Alternative B are provided in Figures 3.1-5 through 3.1-7. KOPs and their associated sensitive-receptor locations are described in **Table 3.1-7**.

TABLE 3.1-7
KOPS AND SENSITIVE RECEPTORS FOR ALTERNATIVE B

Sensitive Receptor		KOP #
1	Motorists driving south on Lone Butte Road and residences to the north and east	1
2	Motorists driving north on Sierra Highway	2
3	Motorists driving south on 20th Street and residences to the north	3

Alternative B is located within the same vicinity as Alternative A and would result in similar effects; however, it would require approximately one-third of the area Alternative A would require. Expansive views of hills to the north and west are visible from much of the area. The visual character of the area is largely rural and undeveloped, with scattered residential, commercial, and industrial uses such as roads, substations, and transmission lines.

This alternative would utilize the same gen-tie line route options proposed in Alternative A. Alternative B would also include construction of an overhead 230 kV gen-tie line from the proposed solar facility to a point of interconnection. Gen-tie lines would be carried overhead on utility poles ranging from 100 to 180 feet in height and would cover a total approximate distance of a 16 miles. The presence of these vertical elements would add man-made elements in the landscape that currently do not exist, resulting in significant aesthetic impacts. Mitigation Measures MM 3.1-1a through MM 3.1-3a for the solar facility portion of the project site, and Mitigation Measures MM 3.1-1b through MM 3.1-3b for the gen-tie portion of the site, are incorporated to reduce visual impacts. However, because there are no feasible mitigation measures that can be implemented to preserve the existing open space landscape character at the project site while at the same time developing a solar energy facility, impacts to visual resources would be significant and unavoidable, despite implementation of these mitigation measures.

A summary of visual changes shown in the simulations is summarized for each KOP below, consistent with those identified for Alternative A (with the exception of KOP 3; see Impact 3.1-1).

KOP 1 – View Looking Southeast from Lone Butte Road and Trotter Avenue

The simulation for KOP 1 reveals that the project would be dominant in the foreground-middleground and would replace the existing natural and undeveloped desert landscape, and would partially block the view of the mountains in the background. Although it is not depicted in the simulation, the proposed substation and gen-tie line would also be visible from KOP 1, which (in combination with the proposed solar arrays) would attract attention and dominate the landscape. Since the Proposed Action would create dominant contrasting features in the landscape, as viewed from KOP 1, an adverse effect to visual resources would occur.

KOP 2 – View Looking Northeast from Sierra Highway

The simulation for KOP 2, as shown in Figure 3.1-6, reveals that although the viewer is at an elevation that is relatively level with the project site, the Proposed Action would not be visible, and

no changes would occur to existing views. The solar site would not be observable after development. Therefore, the Proposed Action as viewed from KOP 2 would not create an adverse effect to visual resources.

KOP 3 – View Looking South from Trotter Avenue and 20th Street

Figure 3.1-7 depicts the view looking south from Trotter Avenue and 20th Street. Although KOP 3 for Alternative B is in the same location as KOP 3 for Alternative A, the solar facility associated with Alternative B is sited further west and would not be visible from KOP 3 (see Figure 3.1-4). Therefore, no impact would occur.

Light

Impacts resulting from lighting would be similar to those described for Alternative A. However, Alternative B has a smaller footprint, and would therefore require less lighting. Similar to Alternative A, if improperly designed or oriented, such lighting may result in light trespass that falls outside the boundaries of the site. Impacts resulting from lighting would be minimized through compliance with all development standards; the Kern County Zoning Ordinance; and the goals, policies, and implementation measures of the Kern County General Plan. Compliance with the Dark Skies Ordinance would be required. In addition, implementation of Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, would minimize the potential for spillover lighting to adversely affect residents.

Glare

Impacts resulting from glare would be similar to those described in Alternative A. However, Alternative B has a smaller footprint, project features from which sunlight could be reflected would occur over a smaller area; therefore, this alternative would result in less glare than Alternative A. Implementation of Mitigation Measure MM 3.1-2a would further minimize glare impacts from the solar facility.

Decommissioning

After the end of its useful life (up to 35 years), Alternative B would require decommissioning and impacts would be similar to those described for Alternative A. Removal of the solar facilities, related infrastructure and grading would result in visually dominant and contrasting features if the site is not restored. Although successful revegetation can be difficult to achieve, Mitigation Measure MM 3.1-2b, which requires a revegetation plan for the gen-tie portion of the site, and MM 3.5-4a for the solar facility portion of the site (Vegetation Salvage and Restoration Plan) are recommended to achieve site restoration are recommended to achieve site restoration over a long period of time. Since restoration activities would occur over an unknown long period of time, an adverse effect to visual resources would occur.

CEQA: Impact Significance Determination

Construction

Direct and indirect impacts associated with construction would be the same for Alternative B as those identified for Alternative A and include the presence of construction equipment, materials, workforce/traffic, as well as grading and vegetation clearing activities. Construction activities

would be visible from SR 14, Sierra Highway, Trotter Avenue, and along the selected gen-tie route during the 24-month construction period. While impacts to sensitive receptors during construction would be similar to those discussed for Alternative A, Alternative B would only include construction of solar arrays on the western boundary of the site (along Lone Butte Road and eastern Trotter Avenue). Therefore, impacts to sensitive receptors located on Trotter Avenue along the eastern portion of the site would be reduced.

In addition, overall construction-related impacts would be temporary. It is anticipated that construction activity would take place during the day, Monday through Friday. However, nighttime work may be necessary. To reduce temporary construction lighting impacts, Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, have been recommended; impacts associated with construction of the project would be less than significant

Operation and Maintenance

The Visual Quality Rating Analysis from KOP 1 and KOP 2 would be the same for Alternative B as for Alternative A in Tables 3.1-4 and 3.1-5. Although the footprint of disturbance would be reduced by more than half, the visual impacts from implementation of the project would be generally the same. Similar to Alternative A, the industrial nature of the Alternative B solar facility would change the visual character of the landscape as viewed from KOPs (and sensitive receptors) for the life of the project. Site specific impacts to visual character would be significant and unavoidable. As described above for construction impacts, impacts to sensitive receptors during operation and maintenance would be similar to those discussed for Alternative A; however, Alternative B would only include construction of solar arrays on the western boundary of the site (along Lone Butte Road and eastern Trotter Avenue). Therefore, visual impacts to sensitive receptors located on Trotter Avenue along the eastern portion of the site would be reduced when compared to Alternative A. Specifically, the solar facility would no longer be located within 100 feet of a residence and not visible from KOP 3.

For site specific visual impacts, Mitigation Measure MM 3.1-2b would incorporate landscaping for the gen-tie portion of the site, as outlined in a revegetation plan, and Mitigation Measures MM 3.1-3a for the solar facility portion of the site, and MM 3.1-3b for the gen-tie portion of the site, would require the developer to clear stockpiled debris from the project area at least twice per year. The proposed gen-tie lines and ancillary utility poles, ranging from 100 to 180 feet in height and totaling a distance of 16 miles, would cause significant and unavoidable impacts to the existing visual character or quality of the site and its surrounding. Mitigation Measures MM 3.1-1a through MM 3.1-3a for the solar facility portion of the project site, and Mitigation Measures MM 3.1-1b through MM 3.1-3b for the gen-tie portion of the site, are incorporated to reduce visual impacts. However, impacts remain significant and unavoidable due to the fact that preserving the open space and undeveloped character of the project site and region while achieving the goals of the proposed project is not feasible.

Light and Glare

Impacts related to creating a new source of substantial glare for Alternative B would be similar to those described for Alternative A (Impact 3.1-2); but overall they would be decreased compared to

Alternative A due to the reduced footprint of Alternative B. If improperly designed or oriented, Alternative B lighting may result in light trespass that falls outside the site boundaries; however, implementation of Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, would ensure that the potential for spillover lighting to adversely affect residents and motorists would be reduced to a less-than-significant level. Implementation of Mitigation Measure MM 3.1-2a for the solar facility portion of the site, would minimize glare impacts to a less-than-significant level. Implementation of Mitigation Measure MM 3.1-2a would ensure impacts related to glare would be less than significant.

Decommissioning

As described above in the NEPA analysis, if the lease for solar generating facilities is not renewed, the developer may be required to decommission the solar facility and gen-tie line. Removal of the solar facilities, gen-tie line, related infrastructure and grading would result in visually dominant and contrasting features if the site is not restored. Although successful revegetation can be difficult to achieve, Mitigation Measure MM 3.1-2b, which require a revegetation plan for the gen-tie portion of the site, and MM 3.5-4a for the solar facility (Vegetation Salvage and Restoration Plan) are recommended to achieve site restoration, over a long period of time. Since restoration activities would occur over an unknown long period of time, impacts would be significant and unavoidable.

Mitigation Measures

Implement Mitigation Measures MM 3.1-1a through MM 3.1-3a, MM 3.1-1b through MM 3.1-3b, and MM 3.5-4a (see Sections 3.1.5 and 3.5.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be significant and unavoidable.

3.1.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under Alternative C, none of the components proposed under Alternative A or Alternative B would be built. If Alternative C were implemented, there would be no changes to the visual character of the Proposed Action area. No mitigation is required.

CEQA: Impact Significance Determination

Alternative C would result in no impacts to visual resources in the Proposed Action area.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No impact would occur.

3.1.4 Cumulative Impact Analysis

3.1.4.1 NEPA: Cumulative Environmental Effects and Their Significance

Multiple projects, including several utility-scale solar and wind energy production facilities, are proposed throughout Kern County and Los Angeles County, particularly in the vicinity of the site in the Mojave Desert and Antelope Valley areas. These have the potential to result in cumulative impacts to aesthetics when considered together with the Proposed Action. The "scarcity" rating criterion is particularly likely to be significantly impacted by widespread development in the area, as unobstructed views of regional topographical features and undeveloped lands would be less available as acreage is developed with solar and wind facilities and new transmission lines are constructed.

As the following discussion indicates, the Proposed Action would result in adverse impacts related to visual resources. The other projects in the region would also be required to implement various mitigation measures to reduce impacts. However, the conversion of thousands of undeveloped acres in a presently rural area to solar and wind energy production uses cannot be mitigated to a degree that impacts are no longer significant. Therefore, the Proposed Action in combination with other projects in the cumulative scenario would result in an adverse effect to visual resources.

3.1.4.2 CEQA: Cumulative Impact Significance Determination

Under CEQA, a project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, Section 15130). This concept is similar to NEPA, which states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR Section 1508.7). Cumulative effects could result from the construction, operation and maintenance, and decommissioning phases of a project.

Cumulative impacts to visual resources would occur where proposed project facilities or activities occupy the same field of view as other built facilities or impacted landscapes, and an adverse change in the visible landscape character is perceived. A cumulative impact could also occur if a viewer perceives that the general visual quality or landscape character of a localized or regional area is diminished by the proliferation of visible similar structures or construction effects, even if the changes are not within the same field of view as existing (or future) structures or facilities. The result is a perceived "industrialization" or "urbanization" of the existing rural or undeveloped landscape character of a region.

There is the potential for substantial future energy development in western Antelope Valley. A list of the existing and reasonably foreseeable cumulative projects is provided in Table 3-1 and shown in Figures 3-1 and 3-2.

Cumulative impacts to visual resources could occur if implementation of the Proposed Action would combine with those of other local or regional projects. The Proposed Action is potentially associated with two types of cumulative impacts:

- Local cumulative impacts within the viewshed of the project, particularly within the foreground-middleground viewing distance (up to 5 miles away). In addition, per the BLM VRM methodology, local projects within background (15 mile) viewing distance of the proposed project may be seen and may add to the cumulative effects, while projects located beyond 15 miles are identified as seldom-seen.
- Regional cumulative impacts beyond the foreground-middleground and background viewing distances, extending to existing and reasonably foreseeable future solar and other energy and development projects within western Antelope Valley as a whole. These projects, while not necessarily located within the same field of view as the proposed project, would, in combination with the proposed project, contribute to a sense of industrialization or urbanization of the existing landscape character of the region.

The existing landscape within both an approximate 15-mile radius of the proposed project and (and within the larger Antelope Valley) currently exhibits an undeveloped and rural character, with mixed industrial and commercial uses. The Alta-Oak Creek-Mojave Wind Project, as identified in Table 3-1, *Cumulative Projects List*, is located within approximately 15-mile radius of the proposed project. While wind and solar projects are not the only projects that would contribute to cumulative visual impacts in the region, their spatially extensive nature and large-scale industrial character causes their potential cumulative visual effects to eclipse those of most other foreseeable future projects listed in Table 3-1. The existing wind project listed already accounts for a profoundly transformed landscape within the area north of Mojave.

In addition to the existing wind project discussed above, Table 3-1 lists 54 PV solar applications and 12 wind project applications in various stages of review or development within the approximate 15-mile radius of the proposed project. There are also two utility corridors proposed along the northern and western edges of Edwards AFB, adjacent to the project site.

If construction at the locally cumulative project locations were to occur at the same time as, or consecutively before or after, construction of the proposed project, construction activities, equipment and night lighting from these sites would combine with similar activities and equipment from the proposed project site. Construction of the proposed project and the other cumulative projects in the immediate project vicinity would lead to the continued presence of construction equipment on roads and in the landscape in the local project region for several years, and cause a substantial cumulative visual impact.

If the 54 solar PV project applications within 15 miles of the proposed project are realized, they, in combination with the proposed project, would result in a substantial intensification and spatial extension of the regional landscape. Twenty-one solar projects in the same area would contribute further to an industrialization of a predominantly rural character that would dominate and eclipse the natural basin and range landscape of the project site and vicinity. This cumulative effect would alter the character of the landscape north, west, and south of the communities of Mojave and Rosamond. The resulting visual impact would be cumulatively considerable.

Cumulative impacts associated with operation of the proposed project or an alternative would include the impacts associated with operational lighting. As required by the Kern County Dark Skies Ordinances, and Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the site, lighting of the proposed project would be shielded and directed downward. Restrictions on light fixture height are also imposed by the ordinance. If improperly designed or oriented, such lighting may result in light trespass that falls outside the boundaries of the site. The other projects in the region would also be required to implement various mitigation measures to reduce lighting impacts. However, the conversion of thousands of acres in a presently rural area to solar and wind energy production uses cannot be mitigated to a degree that impacts are no longer significant. These have the potential to result in cumulative impacts to aesthetics when considered together with the proposed project. As such, the proposed project and other projects in the region would result in significant and unavoidable impacts related to aesthetics, more particularly operational lighting impacts, even after implementation of mitigation.

Cumulative impacts associated with decommissioning of the proposed project or an alternative would include the removal and disposal of facility equipment, as well as the removal of all below ground infrastructure to 5 feet below the ground surface. Restoration of the proposed project site would include returning the area as close as reasonably possible to preconstruction conditions suitable for current adjacent land. However, following removal of the facility, a strong color contrast associated with vegetation removal and disturbed soils would remain. In addition, revegetation in a desert region is difficult and generally enjoys limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a long period of time and significant visual impacts would likely remain. However, Mitigation Measures MM 3.1-1b and MM 3.5-4a are recommended to achieve site restoration to the extent feasible. Because decommissioning and restoration would occur over a long period of time and would not eliminate proposed project's contribution to local and regional cumulative impacts on visual resources, adverse and cumulatively considerable effects would occur.

The proposed project's contribution to the visible industrialization of the desert landscape would constitute a significant visual impact when considered in the context of existing cumulative conditions and reasonably foreseeable projects, both within the immediate project viewshed and in a somewhat broader context that encompasses the proposed project and surroundings as a whole.

The mitigation measures would assist in reducing impact to scenic resources created by the cumulative scenario. However, where the existing natural basin and range landscape still currently predominate, the industrial character of spatially extensive, highly prominent wind and solar projects would come to strongly dominate, substantially degrading the existing visual character and quality. The resulting cumulatively considerable visual impact would be significant and unavoidable.

3.1.5 Mitigation Measures

3.1.5.1 Solar Facility Mitigation Measures

MM 3.1-1a: Facility Lighting Standards. The project shall continuously comply with the following:

Project facility lighting shall be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting shall be directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs shall not extend below the shields.

MM 3.1-2a: Nonreflective Materials. Prior to the issuance of building permits, the project proponent shall demonstrate compliance with the following:

1. Any onsite buildings shall be constructed using nonreflective materials, as approved by Air Force and Kern County.
2. Submit plans showing onsite buildings are designed with a color treatment to be complementary to the surrounding desert landscape and use nonreflective materials, such as matte or nonglossy paint, as approved by Air Force and Kern County.

MM 3.1-3a: Recycling and Trash Abatement. Prior to issuance of a grading or building permit, a Maintenance, Recycling and Trash Abatement, and Pest Management Program shall be submitted to the Air Force and Kern County.

The program shall include, but not limited to the following:

1. The project proponent shall clear debris from the project area at least twice per year; this can be done in conjunction with regular panel washing and site maintenance activities.
2. Signs shall be clearly established with contact information for the project proponent's maintenance staff at regular intervals along the site boundary. Maintenance staff shall respond within three days to resident requests for additional cleanup of debris. Correspondence with such requests and responses shall be submitted to the Air Force, as necessary.
3. Daily construction trash removal with recycling program. Pest/rodent barriers for all receptacles shall be detailed. Locations of all recycling and trash receptacles during operation of the project shall be shown on final plans.
4. Weekly/Monthly/Annual ongoing trash removal and recycling program. Pest/rodent barriers for all receptacles shall be detailed.
5. During construction, operation, and decommissioning, debris and waste generated shall be recycled to the extent feasible.
    a. An on-site Recycling Coordinator shall be designated by the project proponent to facilitate recycling as part of the Maintenance, Recycling and Trash Abatement and Pest Management Program.
    b. The Recycling Coordinator shall facilitate recycling of all construction waste through coordination with contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes.

c. The on-site Recycling Coordinator shall also be responsible for ensuring wastes requiring special disposal are handled according to State and County regulations that are in effect at the time of disposal.

d. Contact information of the coordinator shall be provided to the Air Force and Kern County prior to issuance of building permits.

MM 3.5-4a: Vegetation Salvage Plan. This measure applies to general vegetation and to special-status plants (see section 3.5.5 for details).

3.1.5.2 Gen-tie Mitigation Measures

MM 3.1-1b: Landscape Revegetation and Restoration Plan. The following shall be implemented by the project proponent:

1. Prior to final onsite inspections, groupings of drought-tolerant plants (including relocation of Joshua trees as described in Mitigation Measures MM 3.5-14b), shall be planted along the generation tie line routes where transmission pole structures are constructed and where adjoining property is zoned for residential use. (E [Estate Residential], R-1 [Low-Density Residential], R-2 [Medium-Density Residential], R-3 [High-Density Residential], or PL (Platted Lands) zoning). Drought tolerant species shall consist of locally endemic plants that currently exist on the generation tie-line sites as described in the Biological Resources Technical Report for the Gen-Tie Routes for Edwards Air Force Base Solar EUL Project (Dudek, 2018) and shall extend approximately 25 feet on either side of the transmission pole structures. This requirement may be requested to be waived should the adjacent property be owned by the project proponent (to be verified by the Kern County Planning and Natural Resources Department) or a public or private agency submit correspondence to the Kern County Planning and Natural Resources Department requesting this requirement be waived.
2. Should the project proponent or agency sell the adjacent property prior to a final site inspection, drought-tolerant plants shall be planted prior to the sale. If such landscaping is required, it must be continuously maintained on the tie-line sites by the project proponent, in accordance with Section 19.86 (Landscaping Standards) of the Kern County Zoning Ordinance.
3. Prior to the commencement of operations, the project proponent must submit a Landscape Revegetation and Restoration Plan for the generation tie-line routes to the Kern County Planning and Natural Resources Department for approval. The plan shall include, but not limited to the following:
    a. Where feasible, root balls shall be maintained during vegetation clearing to maintain soil stability and ultimately vegetation re-growth following construction.
    b. Ground cover shall include native seed mix and shall be spread where earthmoving activities have taken place, as needed to establish revegetation.
    c. In areas temporarily disturbed during generation tie-line installation (including grading or removal of root balls resulting in loose soil), the ground surface shall be revegetated with native seed mix or native plants and/or allowed to re-vegetate with existing native seed bank in the top soil where possible to establish revegetation. Areas that contain permanent features such as perimeter roads, and maintenance roads do not require revegetation.

d. The seed mix or native plants shall be determined through consultation with professionals such as landscape architect(s), horticulturist(s), botanist(s), etc. with local knowledge as shown on submitted resume and shall be approved by the Kern County Planning and Natural Resources Department prior to planting. Seed mix shall be hydro-seeded with pure live seed of habitat-appropriate, fast-germinating, weed-free native seed varieties, and shall be approved by the Kern County Planning and Natural Resources Department prior to planting. An appropriate hydraulic mulch and tackifier shall be used to protect and encapsulate the seed mixture to promote successful germination. Additional mulch or fertilizer shall not be applied.

e. All disturbed soil areas should be hydro-seeded per the determination of the SWPPP recommendations. Imprinting is recommended during hydro-seeding.

f. Phased seeding may be used if a phased construction approach is used (i.e. the entire site need not be seeded all at the same time).

g. The plan must include the approved native seed mix, a relative timeline for seeding the routes and a percentage of the routes to be covered, detail the consultation efforts completed and the methods that comply with wildlife agency regulations and prohibition of the use of toxic rodenticides.

h. The revegetation and restoration of the generation tie-line sites, shall be monitored annually for a three-year period, and an annual evaluation report shall be submitted to the Kern County Planning and Natural Resources Department during the three-year period. Ground cover shall be continuously maintained on the site by the project proponent. The three-year monitoring program is intended to ensure the site naturally achieve native plant diversity, establishes perennials, and is consistent with ground cover conditions prior to implementation of the project, where feasible.

MM 3.1-2b: Recycling and Trash Abatement. Prior to issuance of a grading or building permit, a Maintenance, Trash Abatement, and Pest Management Program for the gen-tie construction and decommissioning activities shall be submitted to the Kern County Planning and Natural Resources Department. The program shall include, but not be limited to the following:

1. The project proponent shall clear debris from the generation tie line area daily during the construction and decommissioning activities.
2. Signs shall be clearly established with contact information for the project proponent's maintenance staff. Maintenance staff shall respond within two days to requests for additional cleanup of debris at gen-tie installation sites. Correspondence with such requests and responses shall be submitted to the Kern County Planning and Natural Resources Department.
3. Daily construction trash removal with recycling program during generation tie line installation. Pest/rodent barriers for all receptacles shall be detailed.

MM 3.1-3b: Generation-tie Line Lighting Standards. The project shall continuously comply with the following:

Generation tie line project lighting shall comply with the applicable provisions of the Dark Skies Ordinance (Chapter 19.81 of the Kern County Zoning Ordinance), and shall be designed to provide the minimum illumination needed to achieve safety and security objectives. All lighting shall be

directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs shall not extend below the shields. A lighting plan shall be submitted and approved.

3.1.6 Residual Impacts after Mitigation

Land scarring and vegetation clearance. It is expected that even with effective implementation of Mitigation Measures MM 3.1-3a, 3.5-4a, for the solar facility portion of the project site and Mitigation Measure MM 3.1-2b for the gen-tie portion of the project site, the residual impacts associated with land scarring and vegetation clearance would remain for several years given the difficulty of successful revegetation in an arid environment. This would result in an unavoidable, long-term, adverse impact to visual resources.

Night lighting. The Proposed Action, in conjunction with both existing and reasonably foreseeable cumulative projects, is not expected to create a new source of substantial light that would adversely affect nighttime views in the area. Specifically, the lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting would be directed downward and shielded to focus illumination on the desired areas only and comply with Kern County's "dark sky" ordinance. Lighting would be provided at the electrical enclosures, onsite buildings, and the main access road entrance. Lighting would be limited so that light spillover on the adjacent properties would be minimal. If lighting is needed for night maintenance, portable lighting would be used. Furthermore, the effective implementation of the lighting control steps contained in Mitigation Measure MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-3b for the gen-tie portion of the project site, would ensure that night lighting impacts are reduced to the degree feasible; however, an unavoidable, long-term, adverse impact to visual resources would result with the cumulative scenario.

3.2 Agricultural and Forest Resources

3.2.1 Affected Environment

This section of the EIS/EIR describes the affected environment for agricultural and forest resources in the proposed project area, including the regulatory and environmental settings. It also describes the impacts on agricultural and forest resources that would result from implementation of the proposed project and includes mitigation measures that would reduce these impacts, where applicable.

There are no lands in the vicinity of the solar facility site and gen-tie options that are zoned as forest land, timberland, or for timberland production. Therefore, forest resources are not present within the proposed solar facility site or along the proposed gen-tie line and would not be affected by the project or alternatives. No impacts to forest resources would occur.

3.2.1.1 Scoping Issues Addressed

The following scoping comment related to Agricultural and Forest Resources was provided by an individual, and the issue raised in the comment is addressed in this section:

- Impacts to privately-owned and -operated farms within the footprint of the proposed generation tie lines should be considered in the Draft EIS/EIR.

3.2.1.2 Regulatory Framework

Federal

The Farmland Protection Policy Act (FPPA) was established to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. It directs federal programs to be compatible with state and local policies for the protection of farmlands. The FPPA is found within 7 U.S. Code Section 4201.

State

The California Department of Conservation (DOC) applies the soil classifications created by the Natural Resources Conservation Service (NRCS) to identify and plan for California's agricultural land resources. The following categories are considered Farmland: Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. Other categories mapped by the DOC include: Farmland of Local Importance, Grazing Land, Urban and Built-Up Land, and Other Land.

- **Prime Farmland.** Land that has the ideal combination of physical and chemical features. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields and long-term agricultural production. Land must have been used for irrigated agricultural production at some time in the 4 years prior to the mapping date.
- **Farmland of Statewide Importance.** Land that is similar to Prime Farmland but has minor shortcomings, such as steeper slopes or lower moisture content. The land must have been used for irrigated agricultural production at some time in the 4 years prior to the mapping date.

- **Unique Farmland.** Land with lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated but may include land that supports non-irrigated orchards or vineyards, as found in some climatic zones in California. The land must have been used for crop production at some time in the 4 years prior to the mapping date.
- **Farmland of Local Importance.** Land that is important to the local agricultural economy, as determined by each county's Board of Supervisors and a local advisory committee.
- **Grazing Land.** Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups with an interest in grazing activities. The minimum mapping unit for Grazing Land is 40 acres.
- **Urban and Built-up Land.** Land that is developed with structures that have been built to a density of at least one unit per 1.5 acres, or approximately six structures per 10-acre parcel. This land supports residential, industrial, commercial, institutional, and public administrative uses; railroad and other transportation yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment facilities; water control structures; and other developed uses.
- **Other Land.** Land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural lands that are surrounded on all sides by urban development and greater than 40 acres are mapped as Other Land.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private land owners to restrict specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally designated agricultural preserve areas is eligible for enrollment under a Williamson Act Contract. The Williamson Act program is administered by the DOC in conjunction with local governments that administer the individual contract arrangements with landowners. Participation in the Williamson act program is dependent on County adoption and implementation of the program and is voluntary for landowners (DOC, 2013).

Under the Williamson Act, the landowner commits the parcel to a 10-year period wherein no-conversion out of agricultural use is permitted. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as oppose to its unrestricted market value. Each year the contract automatically renews unless a notice of nonrenewal or cancellation is filed. Nonrenewal or contract cancellation does not change a property's zoning. California Government Code Section 51238 states that, unless otherwise decided by a local board or council, the erection, construction, alteration, or maintenance of electric and communication facilities, as well as other facilities, are determined to be compatible uses within any agricultural preserve. Section 51238 states that the board of supervisors may impose conditions on lands or land uses to be placed within preserves to permit and encourage compatible uses, which conforms to Section 51238.1. Furthermore, under California Government Code Section 51238.1, a board or council may allow

any use that, without conditions or mitigations, would otherwise be considered incompatible. However, this may occur only if the use meets the following conditions:

- The use would not significantly compromise the long-term agricultural capability of the subject contracted parcel or parcels or parcels on other contracted lands in agricultural preserves.
- The use would not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or parcels on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.
- The use would not result in the removal of adjacent contracted land from agricultural or open-space use.

Farmland Security Zone Act

The Farmland Security Zone Act was established by the California State Legislature in 1999 to ensure that long-term farmland preservation is part of public policy in the state, similar to the Williamson Act. Under the provisions of this act, the landowner already under a Williamson Act Contract can apply for Farmland Security Zone status by entering into a contract with the county. Farmland Security Zone classification automatically renews each year for an additional 20 years, in return for a further 35 percent reduction in the taxable value of land and growing improvements, in addition to Williamson Act tax benefits, the owner of the property promises not to develop the property into nonagricultural uses.

Public Resources Code Section 21060.1

Public Resources Code (PRC) Section 21060.1 uses the Farmland Mapping and Monitoring Program (FMMP) to define agricultural land for the purposes of assessing environmental impacts. . The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and the conversion of these lands. The FMMP provides guidance for the analysis of agricultural and land use changes throughout California.

PRC Section 21060.1 uses the FMMP to define agricultural land to assess environmental impacts. The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and to analyze the conversion of such lands. The FMMP provides analysis pertaining to agricultural land use changes throughout California.

Local

The Kern County General Plan states that agriculture is vital to the future of the County and sets goals to protect important agricultural lands for future use and to prevent the conversion of prime agricultural lands to other uses (e.g., industrial or residential). The Kern County General Plan includes the following three designations for agricultural land:

- **8.1 Intensive Agriculture (minimum parcel size 20 acres gross)** — lands devoted to the production of irrigated crops or having potential for such use.
- **8.2 Resource Reserve (minimum parcel size is 20 acres gross, except to a Williamson Act Contract/Farmland Security Zone Contract, in which case the minimum parcel size shall be 80 acres gross)** — lands devoted to areas of mixed natural resource characteristics including rangeland, woodland, and wildlife habitat which occur in an established County water district.
- **8.3 Extensive Agriculture (minimum parcel size 20 acres gross, except lands subject to a Williamson Act contract/Farmland Security Zone contract, in which case the minimum parcel size shall be 80 acres gross)** — lands devoted to uses involving large amounts of land with relatively low value-per-acre yields, such as livestock grazing, dryland farming, and woodlands.

Additionally, the designation of 8.5 (Resource Management) can be used for agricultural uses such as dry land farming and ranch facilities. The policies, goals and implementation measures in the Kern County General Plan for agricultural resources applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the project, therefore, they are not listed below, however, all policies, goals and implementation measures in the Kern County General Plan are incorporated herein by reference.

The Kern County General Plan Land Use, Open Space, and Conservation Element establishes goals, policies and implementation measures for protecting areas of important mineral, petroleum, and agricultural lands, and ensures new development minimizes impacts on neighboring resource lands. The Land Use, Open Space, and Conservation Element also strives to conserve prime agricultural land from premature conversion.

Kern County General Plan Chapter 1. Land Use, Open Space, and Conservation Element

1.9 Resource

Goals

Goal 1: To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations which will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources, or diminish the other amenities which exist in the County.

Goal 2: Protect areas of important mineral, petroleum, and agricultural resource potential for future use.

Goal 3: Ensure the development of resource areas minimize effects on neighboring resource lands.

Goal 5: Conserve prime agriculture lands from premature conversion.

Goal 6: Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment.

Policies

Policy 1: Appropriate resource uses of all types will be encouraged as desirable and consistent interim uses in undeveloped portions of the County regardless of general plan designation.

Policy 7: Areas designated for agricultural use, which include Class I and II and other enhanced agricultural soils with surface delivery water systems, should be protected from incompatible residential, commercial, and industrial subdivision and development activities.

Policy 12: Areas identified by the Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service) as having high range-site value should be conserved for Extensive Agriculture uses or as Resource Reserve, if located within a County water district.

Implementation Measure

Measure F: Prime agricultural lands, according to the Kern County Interim-Important Farmland 2000 map produced by the Department of Conservation, which have Class I or II soils and a surface delivery water system shall be conserved through the use of agricultural zoning with minimum parcel size provisions.

There are no goals, policies, or implementation measures within the Mojave Specific Plan that apply to Agricultural Resources.

The South of Mojave/Elephant Butte Specific Plan states that new development on agricultural land must be in compliance with the existing Zoning Ordinance.

There are no goals, policies, or implementation measures within West Edwards Road Settlement Plan that apply to Agricultural Resources.

There are no goals, policies, or implementation measures within the Actis Interim Rural Community Plan that apply to Agricultural Resources.

Kern County Zoning Ordinance

The Kern County Zoning Ordinance establishes basic regulations under which land is developed. This includes allowable uses, building setback requirements, and development standards. Pursuant to state law, the zoning ordinance must be consistent with the Kern County General Plan. The basic intent of the Kern County Zoning Ordinance is to promote and protect the public health, safety, and welfare via the orderly regulation of the land uses throughout the unincorporated area of the County. The zoning ordinance applies to all property in unincorporated Kern County, except land owned by the United States or any of its agencies.

The Kern County Zoning Ordinance establishes Exclusive Agriculture and Limited Agriculture Zones which list the permitted uses with each zone. Both the Exclusive and Limited Agriculture zones allow transmission lines and supporting towers, poles, and underground facilities for gas, water, electricity, etc., as well as utility substations on site.

Williamson Act Standard Uniform Rules

Kern County has adopted a set of rules that identify compatible land uses within agricultural preserves established under the Williamson Act. The rules restrict uses on such land to agricultural or other compatible uses. Agricultural uses include crop cultivation, grazing, commercial wind farms, livestock breeding, dairies, and uses that are incidental to these uses. Other compatible agricultural uses include those associated with public utilities (e.g., gas, electric, communications, water, and other similar public utilities). For this analysis, the conversion of agricultural land to a solar facility is incompatible with the farming provisions necessary for projects under Williamson Act contracts. Therefore, a proposed solar project on contracted land is required by the County to petition for an early cancellation of the contract. However, the project site does not contain lands under a Williamson Act contract.

3.2.1.3 Environmental Setting

This section of the EIS/EIR describes the existing physical environmental conditions in the vicinity of the project as they relate to the potential impacts to agricultural resources from the Proposed Action.

Regional Setting

Agriculture is a major industry in Kern County. Kern County covers 8,202 square miles, including 1,384 square miles of harvested agricultural land. According to the 2017 Kern County Agricultural Crop Report, agriculture in Kern County was worth $7.3 billion in 2017. The top five commodities for 2017 were grapes, almonds, citrus, milk, and pistachios, , which made up more than $4.5 billion (63%) of the total value.

Kern County is growing rapidly and ranks high on the list of California counties with issues related to urbanization and the loss of farmland. The Department of Conservation (DOC) found that 3,288 acres of land, including all of the categories of important farmland, grazing land, and other land, were converted to nonagricultural use between 2008 and 2010 (DOC, 2014). Additionally, as shown in **Table 3.2-1**, between 2014 and 2016, Kern County lost approximately 4,605 acres of important farmland and converted 1,652 acres to grazing land, which brings the total agricultural land converted to 2,953 acres.

TABLE 3.2-1
2014–2016 FARMLAND CONVERSION IN KERN COUNTY

Land Use Category	Total Acres 2014	Total Acres 2016	Net Acreage Changed
Prime Farmland	585,035	579,295	-5,740
Farmland of Statewide Importance	209,564	209,484	-80
Unique Farmland	90,108	91,323	1,215
Farmland of Local Importance	0	0	0
Important Farmland Subtotal	884,707	880,102	-4,605
Grazing Land	1,847,614	1,849,266	1,652
Agricultural Land Subtotal	2,732,321	2,729,368	-2,953

Land Use Category	Total Acres 2014	Total Acres 2016	Net Acreage Changed
Urban and Built-up Land	151,596	159,179	7,583
Other Land	2,330,523	2,325,914	-4,609
Water Area	9,874	9,853	-21
Total Area Inventoried	5,224,314	5,224,314	0

SOURCE: DOC, 2016a.

According to the Kern Economic Development Corporation, it is estimated that the total population of Kern County will reach 954,191 individuals in 2020, growing from today's population of about 886,507 (KEDC, 2016). The anticipated growth in population will most likely reduce the amount of agricultural land available in the county even further. However, it is important to note the conversion of agricultural land is affected by a number of factors in addition to population growth and urban development. Actual production is dependent on commodity prices, water prices and supply, labor, the proximity of processing and distribution facilities, and pest management. Factors such as weather, trade agreements, and labor disputes can also affect decisions regarding what crops are grown and which lands go in and out of production. In addition, a significant amount of the important farmland in the county has been converted to grazing land over the past several years, which contributes to the overall loss of agricultural land in the county.

Local Setting

Edwards AFB encompasses approximately 481 square miles. Agricultural activities do not currently exist on the base, nor is the development of agricultural land uses among the priorities identified in the Edwards AFB Installation Development Plan.

There are currently no active agricultural land uses within or surrounding the proposed solar facility and gen-tie route options. Several areas along the proposed gen-tie line options appear to have had active agriculture in the past. However, these areas are currently fallow. The nearest active farmland is located approximately 3 miles west of the proposed solar facility and consists primarily of irrigated cropland (see **Figure 3.2-1**). The site of the proposed solar facility is wholly located within Edwards AFB. Kern County has zoned all land within Edwards AFB as Limited Agriculture (A-1). The majority of the proposed gen-tie line Option 1 would be constructed on land zoned by Kern County as Limited Agriculture (A-1) or Exclusive Agriculture (A). The proposed gen-tie line Option 2 would be constructed on land zoned by Kern County as Limited Agriculture (A-1), Exclusive Agriculture (A), Heavy Industrial (M-3), Medium Industrial (M-2), and Estate (E). Proposed Options A and B, for the east-west gen-tie lines, would primarily be constructed on land zoned by Kern County as Limited Agriculture (A-1) and Exclusive Agriculture (A).

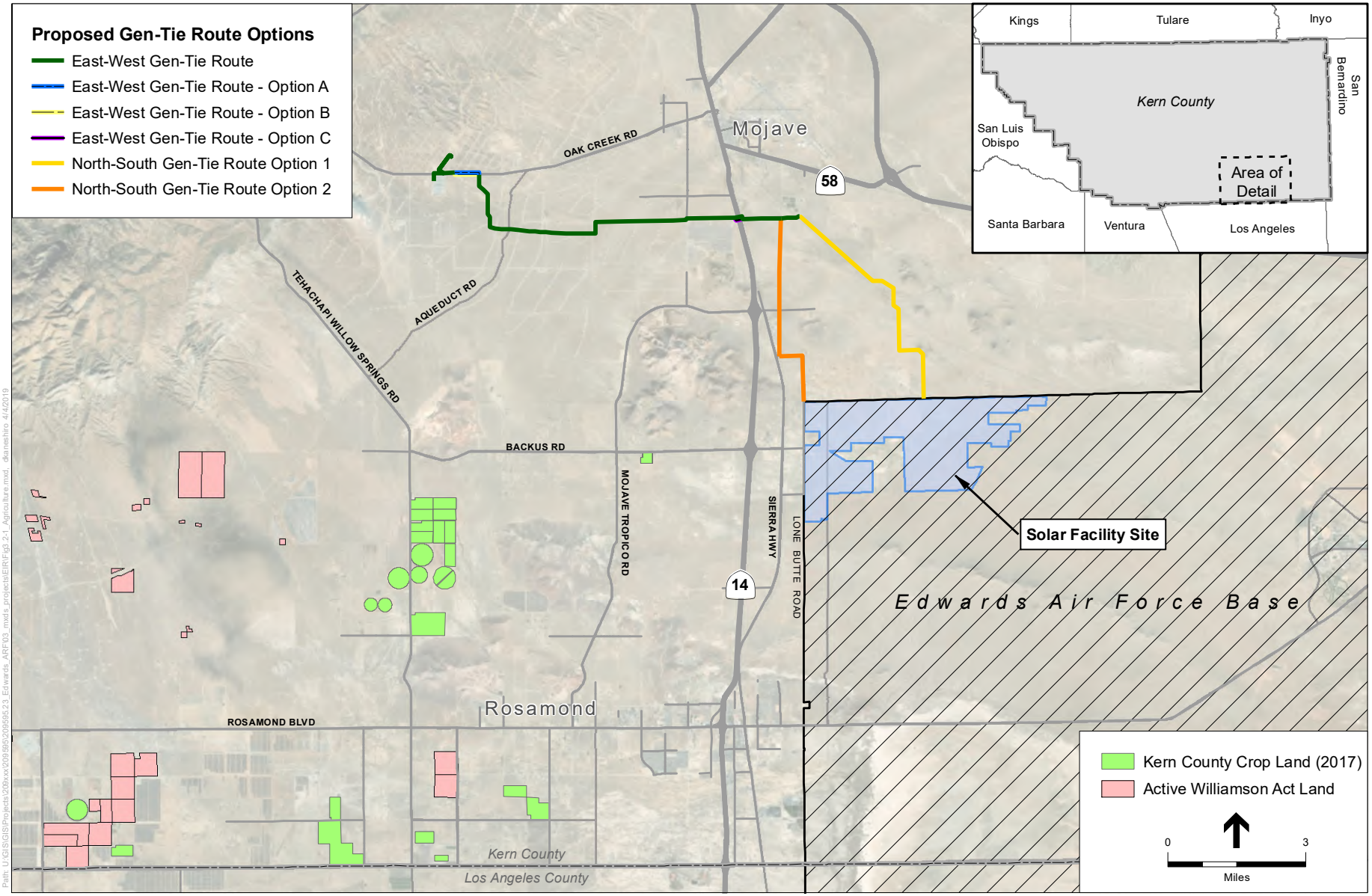


Figure 3.2-1: EXISTING ACTIVE AGRICULTURE

The land occupied by and surrounding the project is primarily identified as "Nonagricultural and Natural Vegetation" land by the California DOC FMMP and Rural Land Mapping Project. However, the proposed gen-tie route options would be constructed within areas identified as "Semi-Agricultural and Rural Commercial Land." None of the land in the vicinity of the project site is identified as an agricultural preserve or under a Williamson Act contract. The nearest active Williamson Act lands are located approximately 10 miles southwest of the solar facility (see Figure 3.2-1).

3.2.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences relating to agricultural and forest resources for the proposed project. It describes the methods used to determine the impacts of the proposed project and lists the thresholds used to conclude whether an effect would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

3.2.2.1 Assessment Methods/Methodology

Potential impacts to agriculture and forest resources associated with implementation of the project were assessed based on Kern County General Plan's applicable goals and policies related to agricultural resources, and the significance criteria established for this analysis.

Important Farmland data from DOC was used to determine the most recent classification of farmland on the project sites (DOC, 2016b). Williamson Act data was obtained from the Kern County Assessor's Office. Federal, State, and local regulations were also reviewed for relevant goals and policies that may be applicable to the Proposed Action. The impact analysis addresses potential conversion of important farmlands, conflict with agricultural zoning classifications, or other changes resulting from the Proposed Action that would remove important farmlands from agricultural production.

3.2.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant related to agricultural resources if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15064.7(a)), and standards of professional practice. A project would have a significant impact on agriculture and forest resources if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps pursuant to the FMMP of the California Resources Agency, to nonagricultural uses.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).
- Result in the loss of forest land or conversion of forest land to non-forest use.

- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.
- Result in the cancellation of an open space contract made pursuant to the California Land Conservancy Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (PRC Section 15205(b)(3)).

The County determined in the NOP/NOI (see Appendix A) that the following environmental issue area would result in no impacts or less-than-significant impacts and were therefore scoped out of requiring further review in this EIS/EIR. Please refer to Appendix A of this EIS/EIR for a copy of the NOP/NOI and additional information regarding these issue areas.

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Important (Farmland), as shown on the maps pursuant to the FMMP of the California Resources Agency, to nonagricultural uses.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).
- Result in the loss of forest land or conversion of forest land to non-forest use
- Result in the cancellation of an open space contract made pursuant to the California Land Conservancy Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (PRC Section 15205(b)(3)).

3.2.3 Analysis of Environmental Effects

3.2.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Construction

The proposed solar facility is located on land zoned by Kern County as Limited Agriculture (A-1). Section 19.14.030 of the Kern County Zoning Ordinance states that electrical power generating plants are permitted with a Conditional Use Permit. However, the land is owned by the federal government and a Conditional Use Permit is not required for the solar facility on federal land.

The majority of the proposed gen-tie route options would be constructed on lands zoned by Kern County as either Limited Agriculture (A-1) or Exclusive Agriculture (A) and Heavy Industrial (M-3) or Medium Industrial (M-2). Sections 19.14.020 (d), 19.12.020, 19.38.020 (g) and 19.40.020 (g) of the Kern County Zoning Ordinance state that transmission lines and supporting towers, poles, and underground facilities for gas, water, electricity, telephone, or telegraph service owned and operated by a public utility company or other company under the jurisdiction of the California Public Utilities Commission are permitted within the Limited Agriculture (A-1) and Exclusive Agriculture (A), Heavy Industrial (M-3), or Medium Industrial (M-2) zones. Therefore, construction of the Proposed Action would not conflict with existing zoning for agricultural use.

The proposed gen-tie line options would be constructed within the center of an up to 120-foot easement, which would result in permanent nonagricultural use of lands zoned as Limited

Agriculture (A-1) and Exclusive Agriculture (A), Heavy Industrial (M-3), or Medium Industrial (M-2). The proposed gen-tie line option would require the approval of a Franchise Agreement through the Kern County Board of Supervisors. The proposed gen-tie route options would also result in permanent nonagricultural use of land identified as "Semi-Agricultural and Rural Commercial Land" by the FMMP and Rural Land Mapping Project. However, the project would not be constructed on land currently used for agricultural purposes, nor would it involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. Therefore, the Proposed Action would not significantly affect farmland or other agricultural resources during the construction phase.

Operation and Maintenance

Operations and maintenance activities such as periodic maintenance and panel washing would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.. Therefore, the Proposed Action would not significantly affect farmland, forest land, or other agricultural resources during the operation and maintenance phase.

Decommissioning

Decommissioning of the Proposed Action would not conflict with existing zoning for agricultural use or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. Therefore, decommissioning would not significantly affect farmland, forest land, or other agricultural resources.

CEQA: Impact Significance Determination

Impact 3.2-1: Would the project conflict with existing zoning for agricultural use or a Williamson Act Contract.

As shown on Figure 3.2-1, no parcels within or immediately adjacent to the project site are subject to Williamson Act contracts; therefore, implementation of the proposed project would not impact Williamson Act lands. As discussed, the Proposed Action would have no impact on existing zoning for agricultural use.

Mitigation Measures

No mitigation measures are required.

Level of Significance

No Impacts.

Impact 3.2-2: Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.

Alternative A would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of

forest land to non-forest use. Operation of the Proposed Action would not affect any adjacent Farmland or agricultural uses because the project would be self-contained and the gen-tie line options would not be expected to affect the ability of adjacent landowners to continue cultivating their land. Implementation of the proposed project would not result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use, impacts related to conversion of Farmland or forestland to nonagricultural or non-forest uses would be less than significant and no mitigation is required.

Mitigation Measures

No mitigation measures are required.

Level of Significance

Impacts would be less than significant.

3.2.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Like Alternative A, all other components of the Alternative B solar facility would be constructed within Edwards AFB on land zoned by Kern County as Limited Agriculture (A-1). Edwards AFB is exempt from the provisions of the zoning code due to its ownership by the federal government. Under Alternative B, the actual solar facility is downsized to less than half of the original project and the portion of the gen-tie route options located outside of Edwards AFB would be identical to that proposed for Alternative A. Construction activities proposed for the Alternative B gen-tie route options would also be the same as proposed under Alternative A to a lesser extent. Therefore, impacts to agricultural resources along the gen-tie line would be identical to those identified for Alternative A. Alternative B would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. Therefore, Alternative B would not significantly affect farmland, forest land, or other agricultural resources during the construction phase (see Impact 3.2-2).

Operation and Maintenance

Similar to Alternative A, operations and maintenance activities such as periodic maintenance and panel washing would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.. Therefore, Alternative B would not significantly affect farmland, forest land, or other agricultural resources during the operation and maintenance phase.

Decommissioning

Alternative B would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. Decommissioning would not significantly affect farmland, forest land, or other agricultural resources during the operation and maintenance phase.

CEQA: Impact Significance Determination

No parcels within or immediately adjacent to Alternative B are subject to Williamson Act contracts; therefore, there would be no impact to Williamson Act lands. Alternative B would not conflict with existing zoning for agricultural use. Therefore, there would be no impacts related to conflicts with existing zoning for agricultural use or Williamson Act contracts (see Impact 3.2-1 above).

Alternative B would not be located on land currently used for agricultural purposes, nor would it involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. As discussed for Alternative A, operation of Alternative B would not affect any adjacent Farmland or agricultural uses because the project would be self-contained and the gen-tie line options would not be expected to affect the ability of adjacent landowners to continue cultivating their land. Impacts related to conversion of Farmland or forestland to nonagricultural or non-forest uses would be less than significant and no mitigation is warranted (see Impact 3.2-2 above).

3.2.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. Alternative C would not conflict with existing zoning for agricultural use or be located on land currently used for agricultural purposes, nor would it involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. Therefore, Alternative C would not affect farmland, forest land, or other agricultural resources during construction, operation and maintenance, and decommissioning phases.

CEQA: Impact Significance Determination

No parcels within or immediately adjacent to Alternative C are subject to Williamson Act contracts; therefore, there would be no impact to Williamson Act lands. Alternative C would not conflict with existing zoning for agricultural use. Therefore, there would be no impacts related to conflicts with existing zoning for agricultural use or Williamson Act contracts (see Impact 3.2-1 above).

Alternative C would not conflict with existing zoning for agricultural purposes, nor would it involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. Therefore, Alternative C would not affect farmland, forest land or other agricultural resources, as no project would be forthcoming (see Impact 3.5-2).

Mitigation Measures

No mitigation measures are required.

Level of Significance

No Impacts.

3.2.4 Cumulative Impact Analysis

3.2.4.1 NEPA: Cumulative Environmental Effects and Their Significance

The scope for cumulative effects relating to agriculture encompasses all past, present and reasonably foreseeable projects that have impacted or could potentially impact farmland in Kern County, California. As shown, between 2014 and 2016, a total of 2,953 acres of agricultural lands were converted to nonagricultural uses in Kern County. Several of the reasonably foreseeable projects presented in Table 3-1 would have the potential to convert farmland to nonagricultural uses; however, the Proposed Action would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use Therefore, the Proposed Action would not have the potential to combine with impacts related to agricultural resources to result in a cumulative impact.

3.2.4.2 CEQA: Cumulative Impact Thresholds of Significance Determination

No parcels within or immediately adjacent to the project site are subject to Williamson Act contracts. Therefore, the proposed project would not incrementally contribute to the conversion of Williamson Act lands to nonagricultural uses. The proposed project would not conflict with existing zoning for agricultural use. Therefore, the proposed project would not incrementally contribute to the rezoning of lands currently zoned for agricultural use. The project would result in no impacts on existing zoning for agricultural use or Williamson Act contracts under the cumulative scenario. The proposed project would not be located on land currently used for agricultural purposes and would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use. Therefore, impacts of the proposed project would not have the potential to combine with impacts of other projects to result in cumulative impacts related to the conversion of Williamson Act contracts or other farmland to nonagricultural uses or forest land to non-forest use.

Mitigation Measures

No mitigation measures are required.

Level of Significance

Cumulative impacts would be less than significant.

3.2.5 Mitigation Measures

No mitigation measures would be required.

3.2.6 Residual Impacts after Mitigation

All impacts related to Williamson Act contracts and other agricultural and forest resources would have no impact or be less than significant without mitigation; therefore, there would be no potential for residual significant impacts to occur.

3.3 Air Quality

3.3.1 Affected Environment

This section of the EIS/EIR describes the affected environment for air quality in the proposed project area, including the regulatory and environmental settings and short- and long-term air quality impacts associated with implementation of the project.

The technical information provided in this section is based in part on the Edwards Air Force Base Solar Facility Air Quality and Greenhouse Gas Emissions Methodology and Emissions Calculations Memorandum (Appendix B2) and the Construction and Operational Health Risk Assessment for the Edwards Air Force Base Solar Facility Project prepared by Dudek in February 2018 (Appendix B3).

3.3.1.1 Scoping Issues Addressed

The following scoping comments related to air quality were provided by agencies and individuals, and these issues and concerns are addressed in this section:

- Fugitive dust mitigation measures should be implemented.
- The effects of dust generation on State Route (SR) 14 and local residents should be considered.
- Air quality impacts from grading of desert lands should be examined in the Draft EIS/EIR.
- A Fugitive Dust Emission Control Plan and a Fugitive Dust Emission Monitoring Plan must be included as required by the Eastern Kern Air Pollution Control District (EKAPCD).
- An application for an "Authority to Construct" must be submitted prior to commencing any ground clearing or earthmoving associated with the solar facility construction.
- Stationary equipment that emits air pollutants (generator sets, concrete batch plants, etc.) may require a permit from the EKAPCD.
- Ambient air conditions and potential air quality impacts of the project, including construction and operation emission estimates, should be included in the EIS/EIR, specifying that mitigation measures should work to reduce ozone precursors.
- The project site is located in an area that the Centers for Disease Control has determined is endemic for *Coccidioides immitis*, a fungus causing Valley Fever in humans. Ground-disturbing activities may result in dispersal of *Coccidioides* spores and a discussion of the potential health and safety impacts resulting from dispersal should be included in the Draft EIS/EIR.

3.3.1.2 Regulatory Framework

In California, air quality is regulated by several agencies, including U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and local air districts such as the EKAPCD. Each of these agencies develops rules and/or regulations to attain the goals or directives imposed upon them through legislation. Although USEPA regulations may not be superseded, some state and local regulations may be more stringent than federal regulations. The project site is

located within the Mojave Desert Air Basin (MDAB), which is under the jurisdiction of the EKAPCD.

Federal

USEPA

The principal air quality regulatory mechanism on the federal level is the Clean Air Act (CAA) and in particular, the 1990 amendments to the CAA and the National Ambient Air Quality Standards (NAAQS) that it establishes. These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. USEPA's primary role at the state level is to oversee the state air quality programs. USEPA sets federal vehicle and stationary source emission standards and oversees approval of all State Implementation Plans (SIP), as well as providing research and guidance in air pollution programs. The SIP is a state level document that identifies all air pollution control programs within California that are designed to meet and maintain the NAAQS.

Attainment defines the status of a given airshed with regard to NAAQS requirements. Air basins not meeting these standards are classified as "nonattainment." The USEPA has designated the project area as being in attainment or unclassified with respect to all NAAQS except ozone. The USEPA has designated the portion of the MDAB where the project is located within Kern County as a moderate nonattainment area for the 2008 federal 8-hour ozone standard (EKAPCD, 2017). The EKAPCD was required to submit a SIP revision for the nonattainment area to show how they would comply with statutory and regulatory conditions to meet attainment. However, modelling indicated that the EKAPCD could not meet the 0.075 ppm standard by the moderate deadline, but could attain it by the 2020 "serious" nonattainment deadline (EKAPCD, 2017). Therefore, pursuant to Section 181(b)(3) of the CAA "Voluntary Reclassification", the EKAPCD requested CARB formally submit a request to USEPA asking for voluntary reclassification from "moderate" to "serious" nonattainment for the 2008, 8-hour Ozone NAAQS, and revise the attainment date to December 31, 2020 (EKAPCD, 2017). The USEPA approved their request to reclassify the basin as "serious" nonattainment effective August 6, 2019 (83 FR 31334, July 5, 2018). The USEPA has designated East Kern County as "serious" nonattainment for the 1987 24-hour PM_{10} NAAQS for the central-east portion of the County, as attainment (maintenance) for the Indian Wells Valley planning area, and as unclassifiable/attainment for the southeastern portion of East Kern County where the project site is located (USEPA, 2015).

The Federal operating permit program under Subchapter V of the CAA (42 U.S.C. Sections 7661-7661f) requires certain major stationary sources of hazardous and/or criteria air pollutants to obtain a federal operating permit, commonly called a "Title V permit." Among other things, a Title V operating permit combines all federally applicable requirements for the affected major stationary source into a single operating permit that requires continuous compliance and periodic compliance certifications to be completed by a responsible official. Edwards AFB currently meets the definition of a major stationary source under the CAA and operates under a Title V operating permit.

Section 176(c) of the CAA requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable

air quality management plans. USEPA has promulgated separate rules that establish conformity analysis procedures for highway/mass-transit projects (40 CFR Part 93, Subpart A) and for other (general) federal agency actions (40 CFR Part 93, Subpart B). General conformity requirements are potentially applicable to many federal agency actions, but apply only to those aspects of an action that involve ongoing federal agency responsibility and control over direct or indirect sources of air pollutant emissions. The USEPA conformity rule establishes a process that is intended to demonstrate that the proposed federal action:

- Would not cause or contribute to new violations of federal air quality standards.
- Would not increase the frequency or severity of existing violations of federal air quality standards.
- Would not delay the timely attainment of federal air quality standards.

The USEPA general conformity rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called *de minimis* levels. Emissions associated with stationary sources that are subject to permit programs incorporated into the SIP (e.g., Title V new source review [NSR] or prevention of serious deterioration [PSD] permits) are not counted against the *de minimis* threshold level.[1]

Compliance with the conformity rule can be demonstrated in several ways. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. If net emissions increases exceed the relevant *de minimis* value, a formal conformity determination process must be followed. Federal agency actions subject to the general conformity rule cannot proceed until there is a demonstration of consistency with the SIP. According to 40 CFR Section 93.158, emissions are accounted for in the SIP if they are included through permitting (NSR or PSD) or other emissions budget plan or if full offsets are provided, or if measures are applied which will ensure the emissions can conform to the *de minimis* requirements.

State

California Air Resources Board

CARB oversees air quality planning and control throughout California by administering the SIP. CARB primarily ensures the implementation of the 1989 amendments to the California Clean Air Act of 1988 (CCAA), responding to the federal CAA requirements and regulating emissions from motor vehicles sold in California, as well as setting fuel specifications to further reduce vehicular emissions.

[1] 40 CFR 93.153(b)(4)(d) Notwithstanding the other requirements of this subpart, a conformity determination is not required for the following Federal actions (or portion thereof): (1) The portion of an action that includes major or minor new or modified stationary sources that require a permit under the new source review (NSR) program (Section 110(a)(2)(c) and Section 173 of the Act) or the prevention of significant deterioration program (title I, part C of the Act).

CARB is also responsible for regulations pertaining to toxic air contaminants (TACs). The Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill [AB] 2588, 1987, Connelly) was enacted in 1987 as a means to establish a formal air toxics emission inventory risk quantification program. AB 2588, as amended, establishes a process that requires stationary sources to report the type and quantities of certain substances their facilities routinely release into the air basin. Each air pollution control district ranks the data into high-, intermediate-, and low-priority categories. When considering the ranking, the potency, toxicity, quantity, volume, and proximity of the facility to receptors are given consideration by an air district. There are no ambient air quality standards for TAC emissions. TACs are regulated in terms of health risks to individuals and populations exposed to the pollutants.

CARB also has on- and off-road engine emission-reduction programs that would indirectly affect the proposed project's emissions through the phasing in of cleaner on- and off-road engines. CARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. 13 CCR Section 1956.8 contains California's emission standards for on-road heavy-duty engines and vehicles, as well as test procedures. CARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles, including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program.

In 2007, CARB enacted a regulation for the reduction of diesel particulate matter and oxides of nitrogen emissions from in-use off-road heavy-duty diesel-fueled vehicles (13 CCR Article 4.8, Chapter 9, Section 2449). This regulation provides target emission rates for particulate matter and oxides of nitrogen (NOx) emissions for owners of fleets of diesel-fueled off-road vehicles. It also limits idling, requires reporting of all vehicles to CARB using the Diesel Off-Road Online Reporting System (DOORS), restricts the addition of older vehicles into fleets, and requires emissions reductions through retiring, replacing, or repowering older engines or installing verified diesel emissions control strategies (i.e., exhaust retrofits). The regulation was amended in 2010 to delay the original timeline of the performance requirements, making the first compliance deadline January 1, 2014, for large fleets (over 5,000 horsepower), 2017 for medium fleets (2,501 to 5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less).

CARB has a Portable Equipment Registration Program that allows owners or operators of portable engines and associated equipment to register their units under a statewide program, with specified emission requirements, without having to obtain individual permits from local air districts. Additionally, CARB also has an Off-Road Compression-Ignition Engine Regulatory and Certification Requirement which is applicable to new heavy-duty off-road compression-ignition engines, including all heavy-duty off-road alternate-fueled compression-ignition engines, produced on or after January 1, 1996, and all other new 2000 model year and later off-road compression-ignition engines. Every new off-road compression-ignition engine that is manufactured for sale, sold, offered for sale, introduced or delivered for introduction into commerce, or imported into California is required to be certified for use and sale by the manufacturer through CARB.

California Renewable Portfolio Standard Program

Senate Bill (SB) 1078 established California's Renewable Portfolio Standard (RPS) program in 2002. The RPS program requires electrical corporations and electric service providers to purchase a specified minimum percentage of electricity generated by eligible renewable energy resources. The bill requires the California Energy Commission to certify eligible renewable energy resources, to design and implement an accounting system to verify compliance with the RPS by retail sellers, and to allocate and award supplemental energy payments to cover above-market costs of renewable energy. Under SB 1078, each electrical corporation was required to increase its total procurement of eligible renewable energy resources by at least 1 percent per year so that 20 percent of its retail sales were procured from eligible renewable energy resources.

In 2006, SB 107 accelerated the RPS program by establishing a deadline of December 31, 2010, for achieving the goal of having 20 percent of total electricity sold to retail customers in California per year generated from eligible renewable energy resources.

The RPS goal was increased to 33 percent when Governor Schwarzenegger signed Executive Order S-14-08 in November 2008. Executive Order S-14-08 was later superseded by Executive Order S-21-09 on September 15, 2009. Executive Order S-21-09 directed the CARB to adopt regulations requiring 33 percent of electricity sold in the state come from renewable energy by 2020. On September 23, 2010, the CARB approved a Renewable Electricity Standard regulation.

On April 12, 2011, the California Senate passed legislation paralleling and expressly superseding CARB's RPS program rules set forth on September 23, 2010. Pursuant to SB 1X-2, the statutory RPS was increased to 33 percent and the RPS program was expanded to include customer-owned utilities. In addition, SB 1X-2 limits the use of out-of-state tradable renewable energy certificates to 25 percent in 2013, 15 percent in 2016, and 10 percent thereafter.

On October 7, 2015, Governor Brown signed the Clean Energy and Pollution Act of 2015, or SB 350, which increased the RPD goal from 33 percent to 50 percent by 2030. The legislation also required local publicly owned electric utilities to establish annual targets for energy efficiency savings and demand reduction consistent with this goal.

Local

Eastern Kern Air Pollution Control District

The EKAPCD has primary responsibility for regulating stationary sources of air pollution situated within its jurisdictional boundaries, which includes Edwards AFB. To this end, the EKAPCD implements air quality programs required by State and federal mandates, enforces rules and regulations based on air pollution laws, and educates businesses and residents about their role in protecting air quality. The EKAPCD is also responsible for managing and permitting existing, new, and modified sources of air emissions within the Mojave Desert portion of Kern County and also established the following rules and regulations to ensure compliance with local, State, and federal air quality regulations:

- **Rule 201.** Rule 201 establishes permitting requirements for stationary sources. Although the proposed project does not involve traditional stationary sources, on March 12, 2015, the EKAPCD adopted rules requiring commercial solar facilities to obtain Authority to Construct and Permit to Operate approval under Rule 201 to address fugitive dust

emissions. Under Rule 201, these projects would be required to submit a Fugitive Dust Emissions Control Plan in accordance with Rule 402. In addition, the District is requiring a Fugitive Dust Emissions Monitoring Plan through which each facility would install upwind and downwind particulate matter air monitoring. The monitoring will be used to demonstrate compliance with the district rules and regulations.

- **Rule 210.1.** Rule 210.1 establishes stationary source offset levels for new and modified stationary sources of air pollutants. Under this rule, the EKAPCD has established required offsets for when the emissions from a source exceed the following trigger levels:
  - PM_{10} - 15 tons/year;
  - Sulfur oxides (as SO_2) - 27 tons/year;
  - Volatile organic compounds (VOCs) - 25 tons/year; and/or
  - NOx (as NO_2) - 25 tons/year.
- **Rule 401.** Rule 401 states that a person shall not discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant from any single emissions source for a period or periods aggregating more than 3 minutes in any 1 hour which is:
  - As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
  - Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A [of the Rules].
- **Rule 402.** Rule 402 addresses significant man-made dust sources from active operations. An active operation is defined as "Activity capable of generating fugitive dust, including any open storage pile, earth-moving activity, construction/demolition activity, disturbed surface area, and non-emergency movement of motor vehicles on unpaved roadways and any parking lot served by an unpaved road subject to this Rule." Rule 402 applies to specified bulk storage, earthmoving, construction and demolition, and man-made conditions resulting in wind erosion, and includes the following requirements:
  - A person shall not cause or allow emissions of fugitive dust from any active operation to remain visible in the atmosphere beyond the property line of the emission source.
  - A person shall utilize one or more Reasonably Available Control Measures (RACM) or Bulk Material Control Measures (BMCM) to minimize fugitive dust emissions from each source type that is part of any active operation, including unpaved roadways.
  - No person shall conduct a large operation without filing for and obtaining an approved fugitive dust emission control plan. Large operation is defined as "Any construction activity on any site involving 10 or more contiguous acres of disturbed surface area, or any earthmoving activity exceeding a daily volume of 10,000 cubic yards, or relocating more than 2,500 cubic yards per day of bulk materials at least three days per year."
  - EKAPCD may require onsite PM_{10} monitoring for any large operation that causes downwind PM_{10} ambient concentrations to increase more than 50 micrograms per cubic meter above upwind concentrations as determined by utilizing high-volume particulate matter samplers, or other USEPA-approved equivalent method(s).
- **Rule 404.1.** Rule 404.1 pertains to particulate matter concentrations – desert basin and states:

  - A person shall not discharge into the atmosphere from any single source operation, in service on the date this Rule is adopted, particulate matter in excess of 0.2 grains per cubic foot of gas at standard conditions.
  - A person shall not discharge into the atmosphere from any single source operation, the construction or modification of which commenced after the adoption of this Rule, particulate matter in excess of 0.1 grains per cubic foot of gas at standard conditions.

- **Rule 419.** Rule 419 states that a person shall not discharge from any source whatsoever such quantities of contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of such persons or the public or that cause or have a natural tendency to cause injury or damage to business or property.
- **Rule 423.** Rule 423 adopts USEPA's National Emissions Standards for Hazardous Air Pollutants (NESHAPs)[2] by reference, which grants EKAPCD the ability to ensure that all sources of hazardous air pollution would comply with applicable standards, criteria, and requirements set forth in Title 40, Chapter 1, parts 61 and 63, of the Code of Federal Regulations that are in effect as of February 10, 2010. As required by the CAA and CCAA, air basins or portions thereof have been classified as either "attainment" or "nonattainment" for each criteria air pollutant based on whether or not the standards have been achieved. Jurisdictions of nonattainment areas are also required to prepare an air quality management plan (AQMP) that includes strategies for achieving attainment. On July 27, 2017, EKAPCD adopted the 2017 Ozone Attainment Plan (EKAPCD, 2017). As a moderate ozone nonattainment area, EKAPCD is required to adopt retrofit Reasonably Available Control Technology rules for all sources of ozone precursor emissions. EKAPCD has fulfilled this mandate by adopting the Reasonably Available Control Technology (RACT) SIP for the 2008 Ozone NAAQS on May 11, 2017 (EKAPCD, 2017a).

Kern County General Plan

The Kern County General Plan Land Use, Open Space, and Conservation Element includes goals, policies and implementation measures that aim to minimize air quality degradation of new development, and enhance county and regional air quality. The Land Use, Open Space, and Conservation Element seeks to ensure that the County accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources and also establishes fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the EKAPCD on ministerial permits The goals, policies, and implementation measures in the Kern County General Plan applicable to air quality, as related to the project, are provided below. The Kern County General Plan contains

[2] NESHAPs are source-specific restrictions that are implemented by the USEPA and are not affected by state or local decisions. State and local districts enforce the NESHAPs and can only impose stricter standards than those proposed in the NESHAPs.

additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the proposed project. Therefore, they are not listed below.

Kern County General Plan Chapter 1. Land Use, Open Space, and Conservation Element

Air Quality

Goal

Goal 1: Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policies

Policy 18: The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.

Policy 19: In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decision making body, as part of its deliberations, will ensure that:

1. All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and
2. The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the California Environmental Quality Act.

Policy 20: The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District on ministerial permits.

Policy 21: The County shall support air districts efforts to reduce PM_{10} and $PM_{2.5}$ emissions.

Policy 22: Kern County shall continue to work with the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District toward air quality attainment with federal, state, and local standards.

Implementation Measures

Measure F: All discretionary permits shall be referred to the appropriate air district for review and comment.

Measure G: Discretionary development projects involving the use of tractor-trailer rigs shall incorporate diesel exhaust reduction strategies including, but not limited to:

1. Minimizing idling time.
2. Electrical overnight plug-ins.

Measure H: Discretionary projects may use one or more of the following to reduce air quality effects:

1. Pave dirt roads within the development.
2. Pave outside storage areas.
3. Provide additional low Volatile Organic Compounds (VOC) producing trees on landscape plans.
4. Use of alternative fuel fleet vehicles or hybrid vehicles.
5. Use of emission control devices on diesel equipment.
6. Develop residential neighborhoods without fireplaces or with the use of Environmental Protection Agency certified, low emission natural gas fireplaces.
7. Provide bicycle lockers and shower facilities on site.
8. Increasing the amount of landscaping beyond what is required in the Zoning Ordinance (Chapter 19.86).
9. The use and development of park and ride facilities in outlying areas.
10. Other strategies that may be recommended by the local Air Pollution Control Districts.

Measure J: The County should include PM_{10} control measures as conditions of approval for subdivision maps, site plans, and grading permits.

Kern County General Plan Chapter 5. Energy Element

Solar Energy Development

Policies

Policy 1: The County shall encourage domestic and commercial solar energy uses to conserve fossil fuels and improve air quality.

Policy 2: The County should attempt to identify and remove disincentives to domestic and commercial solar energy development.

The Mojave Specific Plan identifies policies that would promote the improvement of air quality and maintenance of state and federal air quality standards in the Mojave area, and establishes cooperation with the EKAPCD to implement the Air Quality Attainment Plan. The Plan also encourages development that promotes energy conservation and that minimize the direct and indirect emissions of air contaminants.

The South of Mojave-Elephant Butte Specific Plan states that new development must be in compliance with the requirements of the California Health and Safety Code and the Kern County Health Department with regard to extraction and processing mineral resources (noise and air quality) or cessation of such operations (covering or fencing of openings).

The Willow Springs Specific Plan includes policies and implementation measures that require construction equipment to be fitted with the most modern emission control devises and compliance

with the Mitigation/Implementation Measures and enactment of an approved Air Quality Attainment Plan.

Kern County Best Management Practices for Dust Management

As a result of coordination with various local stakeholders, including the Mojave Air and Space Port, members of the Mojave Chamber of Commerce, Rosamond Municipal Advisory Council, and numerous other community leaders, Kern County has imposed the conditions listed below.

- Development of a Site-Specific Dust Control Plan that considers ongoing community stakeholder input, to the extent feasible and practicable.
- Use of Global Positioning System (GPS) or lasers to level posts, generally avoiding grading except when elevation changes exceed design requirements.
- When grading is unavoidable, it is to be phased and done with the application of approved chemical dust palliatives that stabilize the earth.
- Use of dust suppression measures during road surface preparation activities, including grading and compaction.
- Final road surfaces must be stabilized to achieve a measurable threshold friction velocity (TFV – the wind speed at which erosion starts) equal to or greater than 100 centimeters per second.
- If ground is cleared, plant roots must be left in place where possible.
- Expanded onsite watering processes.
- Installation of wind barrier fencing or screening.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved (i.e., without asphalt) surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 6 inches of freeboard.
- Sending mailings to residents within 1,000 feet of a project site.

Kern County is also carefully monitoring all solar construction activities to ensure that all mitigation measures are followed and are adequate to minimize dust-related health concerns.

Air Quality Conformity Determination for Transportation Plans and Programs

The CAA amendments of 1990 require a finding to be made stating that any project, program, or plan subject to approval by a metropolitan planning organization conforms to air plans for attainment of air quality standards. Kern Council of Governments (COG) is designated the Regional Transportation Planning Agency and Metropolitan Planning Organization for Kern County. In that capacity, Kern COG models air quality projections on population projections in conjunction with current general plan designations and estimated vehicle miles as well as the current Regional Transportation Plan (RTP) and the federal transportation plan for Kern County. These results are compared to pollutant budgets for each basin approved by USEPA in the 1999 base year. Kern County is contained within two air basins: San Joaquin Valley Air Basin (SJVAB) and the MDAB. Each air basin has its own plans and pollutant budgets. Kern COG makes conformity findings for each air basin.

Kern County recently prepared the 2019 Ozone Conformity Analysis as Amendment No. 2 to the 2019 Federal Transportation Improvement Program (FTIP) and 2015 Ozone Conformity Analysis for the 2018 Regional Transportation Plan (RTP) and 2019 FTIP. The FTIP is a plan for the incremental implementation of the long-range RTP, which is a 20-year transportation plan. The conformity findings conclude that the FTIP and RTP result in emissions that are less than the emission budgets of baseline emissions for CO, VOC, NOx, and PM_{10} (Kern Council of Governments, 2019).

3.3.1.3 Environmental Setting

CARB has divided California into regional air basins according to topographic drainage features. The project site is located in the MDAB and is under the jurisdiction of EKAPCD. The MDAB includes the eastern half of Kern County, the northern part of Los Angeles County, most of San Bernardino County except for the southwest corner, and the eastern edge of Riverside County. It is separated from the South Coast Air Basin, to its south, by the San Gabriel and San Bernardino Mountains. It is separated from the San Joaquin Valley, to the northwest, by the Tehachapi Mountains and the south end of the Sierra Nevada.

Topography and Meteorology

Air pollution, especially the dispersion of air pollutants, is directly related to a region's topographic features. Air quality is a function of both the rate and location of pollutant emissions and the meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, which affects ambient air quality.

The project site is located on the northwest corner of Edwards AFB, which is approximately 57 miles southeast of the city of Bakersfield and approximately 7 miles north of Rosamond, and 6 miles south of Mojave, in southeastern Kern County. The project site is located approximately 5 miles south of SR 58 and SR 14 (Antelope Valley Freeway) is located approximately 1.1 miles to the west. The project site is bound by Trotter Avenue to the north and Lone Butte Road to the west. The area directly north and west of the project site includes scattered residential uses. The lands abutting the project site to the east and south are undeveloped and are located within the perimeter of Edwards AFB. Vacant land covered with sparse, low-lying desert vegetation characterize the lands surrounding the rest of the proposed solar facility site. There are currently no active agricultural land uses within or surrounding the proposed solar facility site.

The proposed project lies within an undeveloped portion of Edwards AFB. The site is covered with low-lying desert vegetation and is generally flat (elevations ranging from approximately 2,545 feet above mean sea level (amsl) to approximately 2,480 feet amsl), with a few dirt roads traversing the site. The perimeter of the project site is partially surrounded by a chain-link barbed-wire fence along Lone Butte Road and Trotter Avenue. There are power lines along Division Street, which runs north-south through the western portion of the project site. There are also power lines located along Trotter Avenue, which turns at a slight diagonal to the southeast and through the eastern

portion of the project site. Otherwise, there are no existing structures, paved drives, lighting, or other improvements on the site.

The Mojave Desert Air Basin, the basin in which the project is located, is bordered on the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass (4,200 feet). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley). The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 feet) between San Bernardino and San Jacinto Mountains.

The MDAB is characterized by hot summers, cold winters, large diurnal ranges in temperature, low relative humidity, and irregular rainfall. The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to the Pacific Ocean and the blocking nature of the Sierra Nevada Mountains to the north. Air masses pushed onshore in Southern California by differential heating are channeled through the MDAB. The MDAB is separated from the Southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), the passes of which form the main channels for these air masses.

Although local emissions contribute to poor air quality, the MDAB is also impacted by emissions from the San Joaquin Valley and the South Coast. The portion of the Mojave Desert immediately to the north of the San Gabriel and San Bernardino Mountains is heavily impacted by air pollutants from the South Coast. The movement of pollutants over the mountains into the MDAB from the South Coast alone impacts a broad area including the Twentynine Palms and Lancaster-Palmdale areas. In addition, the area within the MDAB immediately downwind of Tehachapi Pass also receives pollutants from the southern San Joaquin Valley, with the influence of pollutants from the San Joaquin Valley extending as far as Lancaster. Air quality violations in the town of Mojave in the eastern portion of Kern County are attributed entirely to the transport of pollutants from the San Joaquin Valley.

During the summer, the MDAB is generally influenced by a Pacific Subtropical High Cell that sits off the coast to the west, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. Average temperatures recently recorded in the community of Rosamond, located approximately 6 miles west of the project site, range from a low of 29 degrees Fahrenheit (°F) in December to highs of 95° F in July and August (Intellicast, 2017). Rainfall is light, averaging about 0.1 inches in July and 1.62 inches (Intellicast, 2017).

Sensitive Receptors

Sensitive receptors are people who are considered to be more sensitive than others to air pollutants. The reasons for greater-than-average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered sensitive receptors because children, elderly people, and the infirm are more susceptible to respiratory distress and other air-quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually are in the home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The project vicinity consists predominantly of agricultural and undeveloped land with scattered rural residential uses. The nearest residential receptors are located along the western and northern project boundaries. Rural residences are located immediately north of the project site along East Trotter Avenue (approximately 100 feet to the north) and west of the site along Lone Butte Road (approximately 2,800 feet to the west). The nearest residences to the Gen-Tie alignments are from approximately 50 feet away (North-South Gen-Tie Route Option 2). The nearest residence to North-South Gen-Tie Route Option 1 is at a distance of 185 feet (North-South Gen-Tie Route Option 1). The nearest residence to the East-West Gen-Tie Route is 1,195 feet away. The nearest hospital, Mojave Medical Center, is approximately 7 miles northeast of the site in the town of Mojave. The nearest school, Mojave Elementary, is also located in Mojave approximately 6 miles northeast of the site.

National and State Ambient Air Quality Standards

Ambient Air Quality Standards

Regulation of air pollution is achieved through both federal and State ambient air quality standards and permitted emission limits for individual sources of air pollutants. CARB has established and maintains a network of sampling stations (called the State and Local Air Monitoring Stations [SLAMS] network) that work in conjunction with local APCDs and air quality management districts to monitor ambient pollutant levels. Existing and probable future air quality in the project area can best be inferred from examining ambient air quality measurements taken at monitoring station(s) in the vicinity of the project area. As required by the CAA, USEPA has identified criteria pollutants and has established NAAQS to protect public health and welfare. NAAQS have been established for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb. These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare criteria.

To protect human health and the environment, the USEPA has set “primary” and “secondary” ambient standards for each of the criteria pollutants. Primary thresholds were set to protect human health, particularly sensitive receptors such as children, the elderly, and individuals suffering from chronic lung conditions such as asthma and emphysema. Secondary standards were set to protect the natural environment and prevent further deterioration of animals, crops, vegetation, and buildings.

Regional and Local Standards

The NAAQS establish the level for an air pollutant above which detrimental effects to public health or welfare may result. The NAAQS are defined as the maximum acceptable concentrations that, depending on the pollutant, may not be equaled or exceeded more than once per year or in some cases as a percentile of observations. California has generally adopted more stringent ambient air quality standards for the criteria air pollutants (i.e., CAAQS). **Table 3.3-1**, *National and State Criteria Pollutant Standards and EKAPCD Attainment Status*, presents both sets of ambient air quality standards (i.e., national and state) as well as attainment status for each of these standards within the EKAPCD jurisdiction. If a pollutant concentration in an area is lower than the established standard, the area is classified as being in attainment for that pollutant. If the pollutant concentration meets or exceeds the standard (depending on the specific standard for the individual pollutants), the area is classified as a nonattainment area. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated "unclassified."

As shown in Table 3.3-1, the EKAPCD is currently classified as nonattainment for the 1-hour and 8-hour state ozone standards and moderate nonattainment for the national ozone standard. Additionally, the EKAPCD is classified as nonattainment for the state 24-hour PM_{10} standard. The EKAPCD is currently in attainment and/or unclassified status for all other ambient air quality standards. California has also established CAAQS for sulfates, hydrogen sulfide, and vinyl chloride; however, air emissions of these pollutants are not expected to occur under the project and thus these pollutants are not addressed further in this EIS/EIR.

Ambient Air Monitoring

CARB has established and maintains a network of sampling stations (the SLAMS network) that work in conjunction with local air pollution control districts and air quality management districts to monitor ambient pollutant levels. The SLAMS network in Kern County consists of seven stations that monitor various pollutant concentrations. The locations of these stations were chosen to meet monitoring objectives, which, for the SLAMS network, call for stations that monitor the highest pollutant concentrations, representative concentrations in areas of high population density, the impact of major pollution emissions sources, and general background concentration levels.

The EKAPCD is responsible for monitoring air quality in the Kern County portion of the MDAB and the Antelope Valley Air Quality Management District is responsible for monitoring air quality in the Los Angeles County portion of the MDAB. Air quality is monitored to determine whether pollutant concentrations meet state and national air quality standards. There are two air monitoring stations in the vicinity of the project area, the Mojave and the Lancaster air monitoring stations. **Table 3.3-2**, *Air Quality Data Summary (2014–2016)*, shows the monitoring results for criteria pollutants (O_3, PM_{10}, $PM_{2.5}$, and NO_2) for the past 3 years, along with the state and national standards. No data is available for CO, SO_2, H_2S, Vinyl Chloride or other toxic air contaminants in eastern Kern County. As shown, the state and federal ozone, $PM_{2.5}$, and state PM_{10} standards were exceeded on numerous occasions during the past 3 years.

TABLE 3.3-1
NATIONAL AND STATE CRITERIA POLLUTANT STANDARDS AND EKAPCD ATTAINMENT STATUS[1]

Pollutant	Averaging Time	National Standard	State Standard	EKAPCD Attainment Status	
				National	State
Ozone	1 Hour	–	0.09 parts per million (ppm)	Attainment**	**Nonattainment**
	8 Hours	0.070 ppm	0.070 ppm	**Serious Nonattainment***	**Nonattainment**
Carbon Monoxide (CO)	1 Hour	35 ppm	20 ppm	Unclassifiable/ Attainment	Unclassified
	8 Hours	9 ppm	9.0 ppm		
Nitrogen Dioxide (NO_2)	1 Hour	0.100 ppm	0.18 ppm	Unclassified	Attainment
	Annual	0.053 ppm	0.030 ppm		
Sulfur Dioxide (SO_2)	1 Hour	0.075 ppm	0.25 ppm	Unclassified	Attainment
	3 Hours	0.5 ppm	–		
	24 Hours	0.14 ppm	0.04 ppm		
	Annual	0.030 ppm	–		
Respirable Particulate Matter (PM_{10})	24 Hours	150 µg/m^3	50 µg/m^3	Unclassifiable/ Attainment	**Nonattainment**
	Annual	–	20 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	35 µg/m^3	–	Unclassifiable/ Attainment	Unclassified
	Annual	12.0 µg/m^3	12 µg/m^3		
Lead	Monthly	–	1.5 µg/m^3	Unclassifiable/ Attainment	Attainment
	Quarterly	1.5 µg/m^3	–		
	Rolling 3-Month Average	0.15 µg/m^3	–		

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter.

1 There was no data available for Sulfur Dioxide (SO_2) at any of the monitoring stations.

* The attainment status for the National 8-hour ozone standard reflects the 2008 standard (0.075 ppm); formal designations for the 2015 standard (0.070 ppm) have not yet been finalized.

** 1-hour ozone NAAQS was revoked effective June 15, 2004. EKAPCD was in attainment for 1-hour ozone NAAQS at time of revocation; the proposed Attainment Maintenance designation's effective date. was June 21, 2004, therefore it did not become effective.

SOURCE: CARB, 2016a; USEPA, 2018; EKAPCD, 2014

TABLE 3.3-2
AIR QUALITY DATA SUMMARY (2014–2016)

Pollutant	Standard	Monitoring Data by Year[a]		
		2016	2015	2014
Ozone				
Mojave – 923 Poole St. Site				
Highest 1-Hour Average (ppm)		0.104	0.094	0.104
Days over State Standard	0.09	2	1	9
Highest 8-Hour Average (ppm)		0.093	0.084	0.095
Days over State Standard	0.070	55	33	95
Days over National Standard[b]	0.075	60	15	57
Lancaster – 43301 Division St. Site				
Highest 1-Hour Average (ppm)		0.108	0.132	0.101
Days over State Standard	0.09	3	26	3
Highest 8-Hour Average (ppm)		0.091	0.103	0.088
Days over State Standard	0.07	65	82	36
Days over National Standard[b]	0.075	30	53	17
Nitrogen Dioxide (NO_2)				
Lancaster – 43301 Division St. Site				
Highest 1-Hour Average (ppm)		0.049	0.042	0.051
Days over State Standard	0.18	0	0	0
Days over National Standard	0.10	0	0	0
Particulate Matter (PM_{10})				
Mojave – 923 Poole St. Site				
Highest 24-Hour Average (µg/m^3)		130.3	74.9	171.0
Days over State Standard	50	18	5	12
Days over National Standard	150	0	0	1
Lancaster – 43301 Division St. Site				
Highest 24-Hour Average (µg/m^3) [a]		131.5	123.8	131.5
Days over State Standard	50	NR	NR	NR
Days over National Standard	150	0	0	0
Particulate Matter ($PM_{2.5}$)				
Mojave – 923 Poole St. Site				
Highest 24-Hour Average (µg/m3)		25.7	42.4	36.5
Days over National Standard	35	0	2	1
Lancaster – 43301 Division St. Site				
Highest 24-Hour Average (µg/m3)		64.8	10.4	42.0
Days over National Standard	35	2	0	1

ppm = parts per million; µg/m^3 = micrograms per cubic meter; NR = Not Reported

[a] Values are based on state sampling methods.

[b] On October 1, 2015, the national 8-hour ozone standard was lowered from 0.075 ppm to 0.070 ppm; however, days over the national 8-hour ozone standard identified in this table reflect the days over the previous 2008 (0.075 ppm) standard.

SOURCE: CARB, 2018

3.3.1.4 Air Pollutants of Concern

The following is a general description of the physical and health effects from the governmentally regulated air pollutants shown in Table 3.3-1 as well as TACs and airborne fungus.

Ozone

Ozone occurs in two layers of the atmosphere, the troposphere and the stratosphere. The layer surrounding the earth's surface is the troposphere, where “bad” ozone acts as an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric or “good” ozone layer extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays (UV-B).

Bad ozone, a photochemical pollutant, needs reactive organic gases (ROG), NOx and sunlight to form. ROG and NOx are emitted from various sources throughout Kern County. Significant ozone formation generally requires an adequate amount of precursors and several hours of strong sunlight in a stable atmosphere. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

Ozone, a regional air pollutant, is generated over a large area and transported and spread by the wind. As the primary constituent of smog, ozone is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, it is not emitted directly into the air by specific sources but is created by sunlight acting on other air pollutants (the precursors), specifically NOx and ROG. Sources of precursor gases number in the thousands and include common sources such as consumer products, gasoline vapors, chemical solvents, and combustion byproducts of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. Thus, high ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Eastern Kern County has been designated as a nonattainment area for the NAAQS and CAAQS for O_3. The data presented in Table 3.3-2 shows that the Mojave and Lancaster monitoring stations exceeded the 1-hour average ambient O_3 CAAQS and the 8-hour average ambient O_3 NAAQS and CAAQS numerous times between 2014 through 2016.

Health Effects

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular diseases, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as forests and foothill communities, agricultural crops, and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone also accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children (McConnell et al., 2002). Active people, both children and adults,

appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

Ozone is a powerful oxidant—it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard leads to lung inflammation, lung tissue damage, and a reduction in the amount of air inhaled into the lungs. Elevated ozone concentrations also reduce crop and timber yields, damage native plants, and damage materials such as rubber, paints, fabric, and plastics (CARB 2016c and ALA, 2007).

Reactive Organic Gases and Volatile Organic Compounds

Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are two primary subsets of organic gases—ROGs and VOCs—which include all hydrocarbons except those exempted by CARB. Therefore, ROGs are a set of organic gases based on state rules and regulations. VOCs are similar to ROGs in that they include all organic gases except those exempted by federal law. Both VOCs and ROGs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. Combustion engine exhaust, oil refineries, and oil-fueled power plants are the primary sources of hydrocarbons. Another source of hydrocarbons is evaporation of petroleum fuels, solvents, dry cleaning solutions, and paint. For indirect sources, Kern County has established an annual emission threshold of 25 tons per year. Any individual project that meets or exceeds this threshold would be considered by Kern County to have significant air quality impacts. There are no separate federal or California ambient air quality standards for ROGs.

Health Effects

The primary health effects of hydrocarbons result from the formation of ozone and its related health effects (see the ozone health effects discussion above). High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of ROG are considered TACs. An example is benzene, which is a carcinogen. The health effects of individual ROGs are described under the *Toxic Air Contaminants* heading further in this section.

Carbon Monoxide

Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless gas that is highly reactive. CO is a byproduct of motor vehicle exhaust, which contributes more than 66 percent of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the

evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

Eastern Kern County has been designated as an unclassified/attainment area for the NAAQS and CAAQS for CO. Table 3.3-2 reports insufficient data for the CO monitoring at the Mojave or Lancaster monitoring stations during the 3-year period from 2014 through 2016.

Health Effects

When inhaled, CO enters the bloodstream and binds more readily to hemoglobin, the oxygen-carrying protein in blood, than oxygen, thereby reducing the oxygen-carrying capacity of blood and reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. Exposure to CO can cause chest pain in heart patients, headaches, and reduced mental alertness. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and, with prolonged enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin in the blood. Health effects observed may include an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome; and increased daily mortality rate (Fierro et al., 2001).

Oxides of Nitrogen

Oxides of nitrogen is a family of highly reactive gases that is a primary precursor to the formation of ground-level ozone, and reacts in the atmosphere to form acid rain. NOx is emitted from the use of solvents and combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources (i.e., electric utilities and industrial boilers). In terms of NOx emissions, the two principal species of NOx are nitric oxide (NO) and NO_2, with the vast majority (95 percent) of the NOx emissions being composed of NO. NO is converted to NO_2 by several processes—the two most important of these are (1) the reaction of NO with ozone, and (2) the photochemical reaction of NO with hydrocarbons. A brownish gas, NOx is a strong oxidizing agent that reacts in the air to form corrosive nitric acid as well as toxic organic nitrates. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).

For indirect sources, Kern County has established an annual emission threshold of 25 tons calendar per year for NOx. Any individual project that meets or exceeds this threshold would be considered by Kern County to have significant air quality impacts.

Eastern Kern County has been designated as an unclassified area for the NAAQS and CAAQS for NO_2. Table 3.3-2 shows that neither the federal or state NO_2 standards were exceeded at the Lancaster monitoring station over the 3-year period of 2014 through 2016.

Health Effects

NOx is an ozone precursor that combines with ROG to form ozone (see discussion of ozone above for the health effects of ozone).

Direct inhalation of NOx can also cause a wide range of health effects. NOx can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of NO_2 may lead to changes in airway responsiveness and lung function in individuals with pre-existing respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO_2 may lead to increased susceptibility to respiratory infection and may cause irreversible lung damage. Other health effects associated with NO_2 are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NOx can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to the production of particulate nitrates. Airborne NOx can also impair visibility.

NOx is a major component of acid deposition in California. NOx may affect both terrestrial and aquatic ecosystems. NOx in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NOx contributes to a wide range of environmental effects both directly and indirectly when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication (a condition that promotes excessive algae growth, which can lead to a severe depletion of dissolved oxygen and increased levels of toxins harmful to aquatic life). Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms. NOx also contributes to visibility impairment (California Air Pollution Control Officers Association, 2012).

Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter or airborne dusts are the small particles that remain suspended in the air for long periods of time. These are small enough to be inhaled, pass through the respiratory system and lodge in the lungs, possibly leading to adverse health effects. The composition of PM_{10} and $PM_{2.5}$ can vary greatly with time, location, the sources of the material and meteorological conditions. PM_{10} refers to particles less than or equal to 10 microns in aerodynamic diameter. $PM_{2.5}$ refers to particles less than or equal to 2.5 microns in aerodynamic diameter and are a subset of PM_{10}. Dust,

sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM_{10} and $PM_{2.5}$. In addition to those listed previously, secondary particles can also be formed as precipitates from photochemical reactions of gaseous SO_2 and NOx in the atmosphere to create sulfates (SO_4) and (NO_3), respectively. Secondary particles are of greatest concern during the winter months when low inversion layers tend to trap the precursors of secondary particulates.

For indirect sources, Kern County has established an annual emission threshold of 15 tons per calendar year for PM_{10}. Any individual project that meets or exceeds this threshold will be considered by Kern County to have significant air quality impacts.

The largest source of PM_{10} and $PM_{2.5}$ in Kern County is vehicle movement over paved and unpaved roads from demolition and construction activities and farming operations. The southeastern portion of Eastern Kern County where the project site is located has been designated as an unclassified area for the NAAQS for PM_{10} and NAAQS and CAAQS for $PM_{2.5}$, and a nonattainment area for the CAAQS for PM_{10}. Table 3.3-2 shows that PM_{10} levels exceed the NAAQS at the Mojave monitoring station once in 2014 and the CAAQS at the Mojave monitoring station between 5 and 18 times per year between 2014 and 2016. As depicted in Table 3.3-2, $PM_{2.5}$ exceeded the NAAQS at the Mojave and Lancaster monitoring stations between 0 and 2 times per year between 2014 and 2016.

Health Effects

PM_{10} and $PM_{2.5}$ particles are small enough—about one-seventh the thickness of a human hair, or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system's natural defenses. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, and bronchitis and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. PM_{10} and $PM_{2.5}$ can aggravate respiratory disease and cause lung damage, cancer, and premature death. Sensitive populations, including children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis, are especially vulnerable to the effect of PM_{10}. Non-health related effects include reduced visibility and soiling of buildings.

Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to adverse health effects of PM_{10} and $PM_{2.5}$. These "sensitive populations" include children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis. Of greatest concern are recent studies that link PM_{10} exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM_{10} can also damage manmade materials and is a major cause of reduced visibility in many parts of the United States.

Premature deaths linked to particulate matter are now at levels comparable to deaths from traffic accidents and secondhand smoke. One of the most dangerous pollutants, fine particulate matter (e.g., from diesel exhaust) not only bypasses the body's defense mechanisms and becomes embedded in the deepest recesses of the lung but also can disrupt cellular processes. Population-

based studies in hundreds of cities in the United States and around the world have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks. Long-term studies of children's health conducted in California have demonstrated that particulate pollution may significantly reduce lung function growth in children (CARB and American Lung Association [ALA], 2007).

Attaining the California particulate matter standards would annually prevent about 6,500 premature deaths, or 3 percent of all deaths. These premature deaths shorten lives by an average of 14 years. This is roughly equivalent to the same number of deaths (4,200 to 7,400) linked to secondhand smoke in 2000. In comparison, motor vehicle crashes caused 3,200 deaths, and 2,000 deaths resulted from homicide. Attaining the California particulate matter and ozone standards would annually prevent 4,000 hospital admissions for respiratory disease, 3,000 hospital admissions for cardiovascular disease, and 2,000 asthma-related emergency room visits. Exposure to diesel particulate matter causes about 250 excess cancer cases per year in California (Kern County, 2006).

Currently, 57 percent of California's population lives in areas that exceed the national $PM_{2.5}$ air standard, while 90 percent live in areas that exceed California's $PM_{2.5}$ air standard (CARB and ALA, 2007).

Sulfur Dioxide

Sulfates (SO_4^{-2}) are particulate product that comes from the combustion of sulfur-containing fossil fuels. When sulfur monoxide or SO is exposed to oxygen, it precipitates out into sulfates (SO_3 or SO_4). Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California because of regional meteorological features.

For indirect sources, Kern County has established an annual emission threshold of 27 tons per calendar year for SOx, as SO_2. Any individual project that meets or exceeds this threshold will be considered by Kern County to have significant air quality impacts.

Eastern Kern County has been designated as an unclassified area for the NAAQS and attainment area for the CAAQS for SO_2 and as such, no longer monitors ambient levels of SO_2 in the MDAB.

Health Effects

SO_2 is a colorless, irritating gas with a pungent smell, primarily formed from the combustion of fossil fuels containing sulfur. High concentrations of SO_2 can result in temporary breathing impairment for children and adults with asthma who are active outdoors. Short-term exposures of individuals with asthma to elevated SO_2 levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO_2, in conjunction with high levels of PM, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO_2 also is a major precursor to

$PM_{2.5}$, which is a significant health concern and a main contributor to poor visibility (see also the discussion of health effects of particulate matter).

SO_2 not only has a bad odor, it can irritate the respiratory system. Exposure to high concentrations for short periods of time can constrict the bronchi and increase mucous flow, making breathing difficult. SO_2 tends to have more toxic effects when acidic pollutants, liquid or solid aerosols, and particulates are also present. SO_2 can also injure many plant species and varieties, both native and cultivated. Some of the most sensitive plants include various commercially valuable pines, legumes, red and black oaks, white ash, alfalfa, and blackberry. In addition, increases in SO_2 concentrations accelerate the corrosion of metals, probably through the formation of acids. SO_2 is a major precursor to acidic deposition. Sulfur oxides may also damage stone and masonry, paint, various fibers, paper, leather, and electrical components. Increased SO_2 also contributes to impaired visibility. Particulate sulfate, much of which is derived from SO_2 emissions, is a major component of the complex total suspended particulate mixture.

Lead

Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Historically, lead was used to increase the octane rating in automobile fuel. However, because gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels and that use has been mostly phased out, the ambient concentrations of lead have dropped dramatically.

EKAPCD no longer monitors ambient levels of atmospheric lead in the MDAB. Eastern Kern County has been designated as an unclassifiable/attainment area for the NAAQS for Pb and an attainment area for the CAAQS for Pb.

Health Effects

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ. Recent studies also show that lead may be a factor in high blood pressure and subsequent heart disease. Lead can also be deposited on the leaves of plants, presenting a hazard to grazing animals and humans through ingestion.

This highly toxic metal has been used for many years in everyday products, and has been found to cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

Vinyl Chloride

Vinyl chloride monomer is a sweet-smelling, colorless gas at ambient temperature. Landfills, publicly owned treatment works, and polyvinyl chloride (PVC) production are the major identified

sources of vinyl chloride emissions in California. PVC can be fabricated into several products, such as PVC pipes, pipe fittings, doors, windows, bottles, protective gloves, imitation leather, inflatable products, and plastic cards. Vinyl chloride was used in the past as a refrigerant and aerosol propellant but is now banned from use in these applications in California.

Health Effects

In humans, epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of liver angiosarcoma, which is a rare cancer, and have suggested a relationship between exposure cancers of the lung and brain. There are currently no adopted ambient air standards for vinyl chloride. Short-term exposure to vinyl chloride has been linked with the following acute health effects (USEPA, 2016):

- Acute exposure of humans to high levels of vinyl chloride via inhalation has resulted in effects on the central nervous system, such as dizziness, drowsiness, headaches, and giddiness.
- Vinyl chloride is reported to be slightly irritating to the eyes and respiratory tract in humans. Acute exposure to extremely high levels of vinyl chloride has caused loss of consciousness, irritation to the lungs and kidneys, inhibition of blood clotting in humans, and cardiac arrhythmias in animals.

Tests involving acute exposure of mice to vinyl chloride to have shown high acute toxicity from inhalation exposure to the substance. Long-term exposure to vinyl chloride concentrations has been linked with the following chronic health effects (USEPA, 2016).

- Liver damage may result in humans from chronic exposure to vinyl chloride, through both inhalation and oral exposure.
- A small percentage of individuals occupationally exposed to high levels of vinyl chloride in air have developed a set of symptoms termed “vinyl chloride disease,” which is characterized by Raynaud’s phenomenon (fingers blanch and numbness and discomfort are experienced upon exposure to the cold), changes in the bones at the end of the fingers, joint and muscle pain, and scleroderma-like skin changes (thickening of the skin, decreased elasticity, and slight edema).
- Central nervous system effects (including dizziness, drowsiness, fatigue, headache, visual and/or hearing disturbances, memory loss, and sleep disturbances) as well as peripheral nervous system symptoms (peripheral neuropathy, tingling, numbness, weakness, and pain in fingers) have also been reported in workers exposed to vinyl chloride.

Several potential but not verified reproductive/developmental health effects from vinyl chloride exposure have been identified (USEPA, 2016):

- Several case reports suggest that male sexual performance may be affected by vinyl chloride. However, these studies are limited by lack of quantitative exposure information and possible co-occurring exposure to other chemicals.
- Several epidemiological studies have reported an association between vinyl chloride exposure in pregnant women and an increased incidence of birth defects, while other studies have not reported similar findings.

- Epidemiological studies have suggested an association between men occupationally exposed to vinyl chloride and miscarriages during their wives' pregnancies, although other studies have not supported these findings.
- Long-term exposure to vinyl chloride has also been identified as a cancer risk. Inhaled vinyl chloride has been shown to increase the risk of a rare form of liver cancer (angiosarcoma of the liver) in humans. Animal studies have shown that vinyl chloride, via inhalation, increases the incidence of angiosarcoma of the liver and cancer of the liver.

Asbestos

The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Asbestos occurs in certain geologic environments that contain serpentinite and ultramafic rocks, which are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties associated with the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. According to information provided by the Department of Conservation Division of Mines and Geology (CDCDMG), the project site is not located in an area where naturally occurring asbestos is likely to be present (USGS, 2011b).

Health Effects

Asbestos can only adversely affect humans in its fibrous form, and these fibers must be broken and dispersed into the air and then inhaled. During geological processes, mineral asbestos can be crushed, causing it to become airborne. It also enters the air or water from the breakdown of natural deposits. Constant exposure to asbestos at high levels on a regular basis may cause cancer in humans. The two most common forms of cancer are lung cancer and mesothelioma, a rare cancer of the lining that covers the lungs and stomach.

Toxic Air Contaminants

"Hazardous air pollutants" (HAPs) is a term used by the federal CAA that includes a variety of pollutants generated or emitted by industrial production activities. Called TACs under the California Clean Air Act of 1988 (CCAA), 10 pollutants have been identified through ambient air quality data as posing the most substantial health risk in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to brain and nervous system and respiratory disorders. CARB provides emission inventories for only the larger air basins.

Sources include industrial processes such as petroleum refining and chrome-plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. TACs do not have ambient air quality standards. Since no safe levels of TACs can be determined, there are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act apply to facilities that use, produce, or emit toxic chemicals. Facilities that are subject to the toxic emission inventory requirements of the Act must prepare and submit toxic emission inventory plans and reports to CARB and periodically update those reports. While TACs do result in potential health risks for those exposed, the proposed project would not emit TACs

with the exception of diesel particulate matter and therefore only diesel particulate matter is described further in this analysis.

Diesel Particulate Matter

Diesel particulate matter (DPM) is a TAC that is emitted from both mobile and stationary sources. In California, on-road diesel-fueled engines contribute about 24 percent of the statewide total, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute about 5 percent of total diesel particulate matter. Diesel exhaust and many individual substances contained in it (including arsenic, benzene, formaldehyde, and nickel) have the potential to contribute to mutations in cells that can lead to cancer.

Health Effects

Long-term exposure to diesel exhaust particles poses the highest cancer risk of any TAC evaluated by the California Office of Environmental Health Hazard Assessment (OEHHA). CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing TACs stems from diesel exhaust particles.

Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. CARB estimates that diesel-particle levels measured in California's air in 2000 could cause 540 “excess” cancers (beyond what would occur if there were no diesel particles in the air) in a population of one million people over a 70-year lifetime (CARB, 2016b).

Diesel engines are a major source of fine-particle pollution. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children’s lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can reduce lung function in children. In California, diesel exhaust particles have been identified as carcinogens (CARB, 2000).

Airborne Fungus (Valley Fever)

Coccidioidomycosis, often referred to as San Joaquin Valley Fever or Valley Fever, is one of the most studied and oldest known fungal infections. Valley Fever most commonly affects people who live in hot dry areas with alkaline soil and varies with the season. This disease, which affects both humans and animals, is caused by inhalation of arthroconidia (spores) of the fungus *Coccidioides immitis* (CI). CI spores are found in the top few inches of soil and the existence of the fungus in most soil areas is temporary. The cocci fungus lives as a saprophyte in dry, alkaline soil. When

weather and moisture conditions are favorable, the fungus "blooms" and forms many tiny spores that lie dormant in the soil until they are stirred up by wind, vehicles, excavation, or other ground-moving activities and become airborne. Agricultural workers, construction workers, and other people who work outdoors and who are exposed to wind and dust are more likely to contract Valley Fever. Children and adults whose hobbies or sports activities expose them to wind and dust are also more likely to contract Valley Fever. After the fungal spores have settled in the lungs, they change into a multicelluar structure called a spherule. Fungal growth in the lungs occurs as the spherule grows and bursts, releasing endospores, which then develop into more spherules.

The CI fungal spores are often found in the soil around rodent burrows, Indian ruins, and burial grounds. The spores become airborne when the soil is disturbed by winds, construction, farming, and soil-disturbing activities. This type of fungus is endemic to the southwestern United States and more common in Kern County. The ecological factors that appear to be most conducive to the survival and replication of the fungal spores are high summer temperatures, mild winters, sparse rainfall, and alkaline, sandy soils. During drought years, the number of organisms competing with CI decreases, and the CI remains alive, but dormant. When rain finally occurs, the arthrocondia germinate and multiply more than usual because of a decreased number of other competing organisms. Later, the soil dries out in the summer and fall, and the fungi can become airborne and potentially infectious.

Health Effects

About 60 percent of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Of those who are exposed and seek medical treatment, the most common symptoms include fatigue, cough, loss of appetite, rash, headache, and joint aches. In some cases, painful red bumps may develop on the skin. One important fact to mention is that these symptoms are not unique to Valley Fever and may be caused by other illnesses as well. Identifying and confirming this disease requires specific laboratory tests such as: (1) microscopic identification of the fungal spherules in infected tissue, sputum or body fluid sample; (2) growing a culture of *CI* from a tissue specimen, sputum, or body fluid; (3) detection of antibodies (serological tests specifically for Valley Fever) against the fungus in blood serum or other body fluids; and (4) administering the Valley Fever Skin Test (called coccidioidin or spherulin), which indicate prior exposure to the fungus (Valley Fever Center for Excellence, 2017). It should be noted that the incident rate for Valley Fever in Kern County within the MDAB is less than the incident rate in Kern County within the San Joaquin Valley Air Basin, where the highest incidence rate within California occurs (KCPHSD, 2017).

Valley Fever is not contagious, and therefore, cannot be passed on from person to person. Most of those who are infected would recover without treatment within 6 months and would have a life-long immunity to the fungal spores. In severe cases, especially in those patients with rapid and extensive primary illness, those who are at risk for dissemination of disease, and those who have disseminated disease (fungus leaves the lungs and goes to other places in the body), antifungal drug therapy is used. The type of medication used and the duration of drug therapy are determined by the severity of disease and response to the therapy. The medications used include ketoconazole, itraconazole and fluconazole in chronic, mild-to-moderate disease, and amphotericin B, given intravenously or inserted into the spinal fluid, for rapidly progressive disease. Although these

treatments are often helpful, evidence of disease may persist and years of treatment may be required (KCPHSD, 2018a).

The usual course of Valley Fever in healthy people is complete recovery within 6 months. In most cases, the body's immune response is effective and no specific course of treatment is necessary. About 5 percent of cases of Valley Fever result in pneumonia (infection of the lungs), while another 5 to 10 percent of patients develop lung cavities after their initial infection with Valley Fever. These cavities occur most often in older adults, usually without symptoms, and about 50 percent of them disappear within 2 years. Occasionally, these cavities rupture, causing chest pain and difficulty breathing, and require surgical repair. Only 1 to 2 percent of those exposed who seek medical attention would develop a disease that disseminates (spreads) to other parts of the body other than the lungs (KCPHSD, 2018b).

Table 3.3-3, *Range of Complications of Valley Fever Cases*, presents the range of Valley Fever complications based on information from the Kern County Public Health Services Department.

TABLE 3.3-3
RANGE OF COMPLICATIONS OF VALLEY FEVER CASES

Infection Classification	Percent of Total Diagnosed Cases
No Complications	50–60 percent
Acute Pneumonia	40–50 percent
Chronic Progressive Pneumonia	5 percent
Pulmonary Nodules and Cavities	5–10 percent
Disseminated	1–5 percent

SOURCE: KCPHSD, 2018b.

Factors that increase your chances of getting Valley Fever in Kern County include the length of time living in the county, duration of time spent in dusty conditions, being caught in a dust storm, activities involving intensive contact with undisturbed soils, duration of time spent outdoors, spending time outside in June through December, being a male, aged 15 to 44, and the area of the county you live in (KCPHSD, 2018c). Residents new to the San Joaquin Valley are at a higher risk of infection due primarily to low immunity to this particular fungus. Many long-time residents exposed to Valley Fever have recovered and therefore developed a life-long immunity to the disease. The areas of Kern County that have the most incidents of Valley Fever exposure are northeast Bakersfield, Lamont-Arvin, Taft, and Edwards AFB. The Valley Fever fungus has been identified in soil samples taken near the California State University Bakersfield campus. In Kern County, there are approximately 500 cases of Valley Fever reported in a typical year. However, during epidemic years, the number of reported cases can increase to 1,500, or more. The number of reported cases within Kern County during the last 4 years has ranged from a low of 1,013 in 2014 to a high of 2,310 in 2016 (KCPHSD, 2018d). The number deaths from Valley Fever within Kern County during the last 4 years has ranged from a low of 6 in 2016 to a high of 22 in 2014 (KCPHSD, 2018e).

3.3.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences relating to air quality for the proposed project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant. Where warranted, measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

3.3.2.1 Assessment Methods/Methodology

Alternative A, the Proposed Action, would be the construction, operation, and maintenance of a photovoltaic facility of greater than 100 MW of energy on up to a maximum of 4,000 acres of undeveloped land which the Air Force proposes to lease to the developer. The Proposed Action would also include construction, operation and maintenance of a 230-kilovolt (kV) generation tie (gen-tie) line from the proposed solar facility to the Southern California Edison (SCE) Windhub Substation and/or privately owned Westwind Substation. There are three options for the north-south gen-tie connection and the Proposed Action would include only one of these. There are two options for the east-west gen-tie connection and the Proposed Action would include only one of these two east-west route options. The final gen-tie route will be determined by the ability to acquire access easements for construction and installation of the line from public and private entities. However, because all the possible gen-tie options would be similar in length, a singular construction schedule was assumed for all options.

The assumptions associated with the emission estimates are detailed in a Memorandum titled Edwards Air Force Base Solar Facility Air Quality and Greenhouse Gas Emissions Methodology and Emissions Calculations (Dudek, 2018), prepared by Dudek, in Appendix B2 of this EIS/EIR. Project-generated criteria air pollutant emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, the latest model available for both short-term construction and long-term operational criteria air pollutant emissions. The use of CalEEMod is consistent with Kern County recommendations for project level review since CalEEMod uses current emission factors and default values and has the ability to quantify indirect air quality emissions and air quality mitigation (Kern County, 2006).

Per the Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports (Kern County, 2006), this air quality modeling analysis assessed the PM_{10} and $PM_{2.5}$ ambient air quality impacts associated with the project to determine if project emissions are predicted to cause or contribute to a violation of ambient air quality standards by exceeding the NAAQS and/or CAAQS.

Construction Assumptions

Emissions from the construction phase of the project were estimated using CalEEMod. Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided in the previous air quality assessment and CalEEMod default values when project specifics were not known (Edwards AFB, 2017).

For purposes of estimating project emissions, and based on information provided by the project applicant, this analysis assumed an original start date of July 2018 with construction ending in 2020, which yields a conservative estimate of emissions as it assumed that construction activities would occur at the earliest feasible date and applied the mobile source and fugitive dust emission factors for that date. [3] Mobile source and fugitive emission factors are slightly less each year due to more stringent standards, so an earlier start date would result in higher emissions. Construction of the project has been pushed back and will now commence in July 2020 and last approximately 24 months, ending in July 2022. Since construction emissions go down over time, this analysis is still valid and is a conservative estimate of project emissions, as it results in higher emissions than if the analysis was rerun using the new construction start date.

The phasing of construction activities described below represents the highest possible emissions; with all phases of solar facility construction happening directly after one another. The analysis contained herein is based on the following assumptions (durations are approximated):

- Solar Facility Construction July 2020 – July 2022 (24 months)
- Gen-tie Construction October 2020 – July 2021 (9 months)

Table 3.3-4, *Construction Equipment*, details the anticipated construction equipment, quantity, and usage for construction of the solar facility and the gen-tie. It also provides estimates for vehicle trips. The analysis assumes that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction. Construction worker estimates, vendor and haul tuck trips by construction phase were based on assumptions in previous air quality assessments for this proposed project. It was assumed there would be an average of 550 peak daily workers for a total of 1,100 one-way trips, 339 daily miscellaneous delivery trips, 504 daily water truck trips (vendor trucks) and 10 daily panel delivery trips (haul trips). No additional haul truck trips for earthwork materials were assumed because earthwork volumes are anticipated to be balanced on site. Based off the information provided in previous air quality assessments trip length for worker, vendor and haul trips were assumed to be 30, 7.3, and 114 miles respectively. Additionally, it was assumed that workers and vendors would travel 0.27 miles on unpaved roads each trip and haul trucks would travel 2.5 miles on unpaved roads each trip (Edwards AFB, 2017).

Dispersion modeling for PM_{10} and $PM_{2.5}$ was performed using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), which is the model the EKAPCD requires for atmospheric dispersion of emissions. Offsite concentrations were modeled

[3] This analysis assumed a construction start date of July 2018, which represents the earliest date construction would be initiated at the time the Project was proposed. The earliest start date for construction of the Project represents the worst-case scenario for air quality and GHG emissions because equipment and vehicle emission factors for later years would be slightly less each year due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles. Thus, although construction will not occur until 2020, the analysis of construction starting in 2018 would be more conservative, as this year would yield higher emissions than those in 2020. Thus, the analysis provided in this Draft EIS/EIR is a conservative analysis and is still valid, although the construction start date has been moved out 2 years.

for the construction phase with the estimated project emissions in order to determine compliance with NAAQS and CAAQS. Principal parameters of AERMOD for project construction include:

Operational Assumptions

Long-term operational emissions associated with the proposed project were also calculated using CalEEMod, version 2016.3.1. Long-term emissions are caused by operational mobile sources from periodic maintenance and cleaning of the solar panels.

Area Sources

CalEEMod emission factors were used to estimate operational emissions from area sources, which include architectural coatings. Based on the type of structure for the Operation and Maintenance (O&M) building, it is assumed that the surface area for painting equals two times the floor square footage, with 75 percent assumed for interior coating and 25 percent assumed for exterior coating.

TABLE 3.3-4
CONSTRUCTION EQUIPMENT

Equipment				One-way Vehicle Trips		
Construction Phase	**Equipment Type**	**Quantity**	**Usage Hours**	**Average Daily Worker Trips**	**Average Daily Vendor Truck Trips**	**Total Haul Truck Trips**
Solar Facility Construction	Excavators	9	1.1	1,100	843	5,200
	Forklifts	25	0.5			
	Generator Sets	4	8			
	Off-Highway Tractors	3	0.3			
	Off-Highway Tractors	3	0.5			
	Other Construction Equipment	30	2			
	Other Construction Equipment	20	1.1			
	Other Material Handling Equipment	10	1.5			
	Rubber Tired Dozers	2	1.4			
	Scrapers	4	1.6			
	Tractors/Loaders/Backhoes	35	0.7			
	Trenchers	20	1.2			
Gen-Tie Construction	Cranes	1	1.6	116	60	0
	Excavators	1	6			
	Other Construction Equipment	2	2			
	Other Construction Equipment	2	4			
	Other Material Handling Equipment	1	4			
	Tractors/Loaders/Backhoes	1	4			

SOURCE: Dudek, 2017.

Energy Sources

Electricity use would contribute indirectly to criteria air pollutant emissions; however, since criteria pollutant emissions occur at the site of the power plant, which is typically off site, they were not quantified for this project.

Mobile Sources

Mobile sources for the project would primarily be motor vehicles (automobiles and light-duty trucks) traveling to and from the project site. Based on conservative estimates for vehicular travel, the project is anticipated to have up to 8,778 trips per year during operation, accounting for the commutes and performance of regular inspection and maintenance activities by 24 full-time-equivalent staff. Estimated activity data from the Applicant and CalEEMod were used to calculate emissions from this source category.

Off-Road Vehicles

To conduct maintenance activities onsite, including but not limited to panel replacement and repair, it was assumed that two forklifts and two backhoes would be employed for 8 hours a day, 12 days a year. This information in conjunction with CalEEMod values were used to estimate operational off-road vehicle GHG emissions in CalEEMod.

TAC Emissions

During construction and operation of the proposed project, the use of diesel-powered equipment at the project site would generate emissions of DPM, which is a TAC. As the potential for health risk impacts could occur due to onsite DPM emissions from the construction and operation phases of the project, a health risk assessment was conducted to determine the potential cancer risk to the closest sensitive receptors.

Cancer risk is defined as the increase in probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased chances in one million. The cancer risk from exposure to a TAC is estimated by calculating the inhalation (and, if applicable, ingestion or dermal) dose in units of milligrams/kilogram body weight per day. The dose is based on an ambient concentration in units of micrograms per cubic meter (µg/m3), age sensitivity factors, breathing rates, exposure period, and fraction of time spent at home. The cancer risk is calculated by multiplying the dose by the cancer potency factor, expressed as (milligrams/kilogram body weight per day)-1. Cancer risks are typically calculated for all carcinogenic TACs and summed to calculate the overall increase in cancer risk to an individual. The calculation procedure assumes that cancer risk is proportional to concentrations at any level of exposure and that risks due to different carcinogens are additive. This approach is generally considered a conservative assumption at low doses and is consistent with OEHHA's regulatory approach.

The cancer risk calculations were performed by multiplying the predicted dispersion modeled output data (AERMOD data) by the TAC emissions and the appropriate risk values. The exposure and risk equations that were used to calculate the cancer risk at receptors are integrated in the Hotspot Analysis and Reporting Program, Version 2 (HARP 2) model, in accordance with Risk Assessment Guidelines (OEHHA, 2015).

The noncancer health impact of an inhaled TAC is measured by the hazard quotient, which is the ratio of the ambient concentration of a TAC in units of µg/m3 divided by the reference exposure level (REL), also in units of µg/m3. The REL is the concentration at or below which no adverse health effects are anticipated. The REL is typically based on health effects to a particular target organ system, such as the respiratory system, liver, or central nervous system. Hazard quotients of individual TACs are then summed for each target organ system to obtain a hazard index (HI). For DPM, the target organ system is the respiratory system.

In addition to the potential cancer risk, DPM has chronic (i.e., long-term) noncancer health impacts. The chronic noncancer HI for DPM was calculated by dividing the maximum modeled annual average concentration of TACs by its REL as implemented by HARP 2.

The dispersion of DPM was modeled using the AERMOD dispersion model, along with meteorological data provided by the CARB for the Edwards AFB, and the resultant health impacts were calculated using the CARB HARP 2. For the residential health risk associated with construction, the health risk assessment (HRA) assumes exposure would start in the third trimester of pregnancy and occur 8 hours per day, 5 days per week, for 24 months to account for the short-term construction activity duration. For the residential health risk associated with operations, the HRA assumes exposure would start in the third trimester of pregnancy and occur 8 hours per day, 12 days per year, for 30 years to account for the long-term activity duration.

3.3.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was considered significant related to air quality if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

NEPA: General Conformity Analysis

Independent of NEPA, CAA Section 176 requires federal agencies that are funding, permitting, or approving an activity to ensure the activity conforms to the applicable SIP adopted to eliminate or reduce air quality violations (42 USC 7506). The CAA conformity *de minimis* levels are used as mass emissions indicators for adverse annual emissions of nonattainment pollutants to the federal ambient air quality standard. The study area is nonattainment for the NAAQS for the ozone 8-hour standard; therefore, emissions of ozone precursors (i.e., ROG and NOx) are the prime concern relative to meeting the NAAQS in the study area. Thus, the serious nonattainment area factors were used for the thresholds as the area is in serious nonattainment for those NAAQS. For the other criteria pollutants, the factors for the maintenance areas were used for the thresholds. For this analysis, the *de minimis* levels are used to gauge the potential for an Action Alternative to result in an exceedance of a NAAQS (USEPA, 2017). The federal *de minimis* levels of ROG, NOx and PM_{10} are used to see if an exceedance of a NAAQS would have a substantial effect on the air quality environment.

- **ROG (Ozone) -** 50 tons per year
- **NOx (Ozone)–** 50 tons per year
- **PM_{10} -** 100 tons per year
- **$PM_{2.5}$** – 100 tons per year

- **CO** – 100 tons per year
- **SO_2** – 100 tons per year

CEQA: Impact Significance Determination

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in Appendix G of the CEQA Guidelines, to determine if a project could potentially have a significant adverse effect to air quality.

A project could have a significant adverse effect on air quality if it:

- Conflicts with or obstructs implementation of the applicable air quality plan.
- Violates any air quality standard as adopted in (c)i or (c)ii, or as established by EPA or air district or contributes substantially to an existing or projected air quality violation.
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is considered nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). Specifically, if implementation of the project would exceed any of the following adopted thresholds of the EKAPCD:
  - Construction and Operational and Area Sources:[4]
    - 25 tons per year for ROG
    - 25 tons per year for NOx
    - 40 tons per year for SOx
    - 15 tons per year for PM_{10}
    - 100 tons per year for CO
  - Stationary Sources, as determined by District Rules:
    - 25 tons per year
  - Operations – Indirect Sources (motor vehicles):
    - 137 pounds per day of ROG
    - 137 pounds per day of NOx
- Exposes sensitive receptors to substantial pollutant concentrations.
  - Cancer risk impacts
    - MICR – 10 in one million (10-5)
  - Chronic non-cancer risk impacts
    - Chronic Hazard Index (HIC) – 1.0
- Creates objectionable odors affecting a substantial number of people.

The lead agency determined in the NOP (see Appendix A1) that there would be no impacts or less-than-significant impacts related to the potential for the proposed project to generate objectionable

[4] The thresholds are based on EKAPCD Rule 210.1 New and Modified Stationary Source Review.

odors that would affect a substantial number of people. Therefore, this issue is not reviewed further in this EIS/EIR. Please refer to Appendix A1 for a copy of the NOP/IS and additional information regarding odors.

3.3.3 Analysis of Environmental Effects

3.3.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: General Conformity Analysis

Construction Criteria Pollutant Mass Emissions

Alternative A would likely involve construction of the project over the course of a 2-year schedule that would likely occur over three calendar years. For the purposes of this analysis, it is assumed that the construction period would begin in July 2020 and would end in July 2022, which represents a reasonable scenario with individual sections of the facility being built directly after one another. Air pollutant exhaust emissions would be generated onsite by off-road equipment and vehicles (e.g., excavators, tractors, trenchers, forklifts, cranes) that would be used to prepare the project site and construct the solar facility and associated gen-tie line, and offsite by vehicles that would transport workers to the work sites and haul panels and various materials and supplies to and from the site. In addition to exhaust emissions, construction activities would generate fugitive dust in the form of PM_{10} and $PM_{2.5}$ from onsite ground disturbance by heavy construction equipment as well as from vehicular travel on unpaved roads.

Daily and annual construction emissions by calendar year were estimated for Alternative A and are described in **Table 3.3-5**, *Alternative A Estimated Maximum Unmitigated Construction Emissions*. For all assumptions used to estimate construction emissions, including the associated CalEEMod output files, refer to Appendix B2. As described in the table, maximum daily emissions of VOC and $PM_{2.5}$ would occur in 2020. Maximum daily emissions of NOx, CO, and SOx would occur in 2021 and maximum daily PM_{10} emissions would occur in 2022. Maximum annual emissions would occur in the year 2021. As shown in Table 3.3-5, annual construction unmitigated emissions would not exceed *de minimis* levels and the project would not result in an exceedance of the NAAQS.

TABLE 3.3-5
ALTERNATIVE A ESTIMATED MAXIMUM UNMITIGATED CONSTRUCTION EMISSIONS

Daily Emissions

	Pollutants (pounds per day)					
Construction Year	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	32.58	248.33	224.20	0.62	542.57	65.39
2021	32.38	252.76	229.97	0.67	476.92	58.90
2022	29.04	226.82	214.94	0.66	545.69	64.81
Maximum Daily Emissions	**32.58**	**252.76**	**229.97**	**0.67**	**545.69**	**65.39**

Annual Emissions

	Pollutants (tons per year)					
Construction Year	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	2.05	16.16	14.89	0.04	32.11	4
2021	3.78	30.51	28.30	0.08	55.77	7.06
2022	1.79	14.50	14.02	0.04	30.96	3.87
Maximum Daily Emissions	**3.78**	**30.51**	**28.30**	**0.08**	**55.77**	**7.06**
General Conformity *De Minimis* Level	50	50	100	100	100	100
Exceeds Level?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
Refer to Appendix B2 for details regarding the construction emission estimates.
SOURCE: Dudek, 2018

Table 3.3-6, *Alternative A Estimated Maximum Mitigated Construction Emissions*, shows the resulting maximum daily and annual emissions with incorporated project reduction design features, which includes use of tier 3 equipment and compliance with Rule 402, specifically limiting off-road vehicle speed to 15 miles per hour and watering twice daily. As shown in the table, maximum daily and annual emissions of VOC, NOx, PM_{10} and $PM_{2.5}$ were reduced compared to the unmitigated emissions in Table 3.3-5. The project's overall annual emissions would be greatest in 2021. As shown in Table 3.3-6, annual mitigated construction emissions would not exceed *de minimis* levels and the project would not result in an exceedance of the NAAQS. Therefore, project construction would not result in adverse impacts.

Reduced-Visibility Impacts

Visibility at offsite locations may be impacted by emissions of airborne PM from short-term construction activities. Federally designated Class I areas are of particular concern. These include many wilderness areas and national parks. In addition, military aircraft use areas within the Upper Mojave Desert region, such as Edwards Air Force Base, Fort Irwin, China Lake Naval Weapons Station and the R-2508 Airspace Complex are also sensitive to reduced visibility from airborne PM.

TABLE 3.3-6
ALTERNATIVE A ESTIMATED MAXIMUM MITIGATED CONSTRUCTION EMISSIONS

Daily Emissions

	Pollutants (pounds per day)					
Construction Year	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	22.48	183.21	234.32	0.62	163.87	24.73
2021	22.47	193.51	242.98	0.67	146.72	23.48
2022	20.07	179.09	229.09	0.66	165.86	25.03
Maximum Daily Emissions	**22.48**	**193.51**	**242.98**	**0.67**	**165.86**	**25.03**

Annual Emissions

	Pollutants (tons per year)					
Construction Year	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	1.39	11.89	15.51	0.04	9.98	1.54
2021	2.57	23.31	29.82	0.08	17.57	2.83
2022	1.21	11.43	14.93	0.04	9.88	1.53
Maximum Daily Emissions	**2.57**	**23.31**	**29.82**	**0.08**	**17.57**	**2.83**
General Conformity *De Minimis* Level	50	50	100	100	100	100
Exceeds Level?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.
SOURCE: Dudek, 2018

Visibility impact analyses are intended for stationary sources of emissions which are subject to the PSD requirements in 40 CFR Part 60; they are not usually conducted for area sources. However, because the Project's will increase PM_{10} emissions, a construction Ambient Air Quality Assessment (AAQA) was conducted to see how project emissions would impact the Class 1 area.

Maximum daily emissions were used as the basis for determining the project's potential impact on ambient air quality. For the initial assessment (Step 1) of the AAQA, the maximum background concentration of the project site for each pollutant and averaging period combination was added to the corresponding maximum ground-level concentration (GLC) from project-related construction. The sum of these values was then compared to the corresponding ambient air quality standard. If the incremental increase in concentration from project-related sources did not cause an exceedance of an ambient air quality standard, then the analysis was complete for that source/receptor/pollutant concentration. If the incremental increase did cause an exceedance of an ambient air quality standard, then the analysis proceeded to Step 2. Step 2 was similar to Step 1 with one major difference. For this step, the maximum GLC of each pollutant and averaging period combination were compared to the pollutant's corresponding significance impact level (SIL). The SIL is used to evaluate whether the project's construction emissions would contribute to a violation of an ambient air quality standard, where the background level is close to or exceeds an ambient air quality standard. If the maximum GLC did not exceed the corresponding SIL, then the analysis was

complete for that source/receptor/pollutant combination, and no further analysis was required. **Table 3.3-7**, *Alternative A Unmitigated Construction Ambient Air Quality Impact Assessment Results*, presents a summary of the two-step process taken to determine whether construction activities associated with the project would cause or contribute to ambient air quality impacts.

TABLE 3.3-7
ALTERNATIVE A UNMITIGATED CONSTRUCTION AMBIENT AIR QUALITY IMPACT ASSESSMENT RESULTS1

Step 1 – Ambient Air Quality Standard Basis

		AAQS	Maximum Concentration: Project = Background Levels	
Impact Parameter	**Applicable Standard**	**µg/m³**	**µg/m³**	**Exceed AAQS?**
24-hour PM_{10}	State	50	314	**Yes (Step 2)**
	Federal	150	327	**Yes (Step 2)**
Annual PM_{10}	State	20	31	**Yes (Step 2)**
24-hour $PM_{2.5}$	Federal	35	59	**Yes (Step 2)**
Annual $PM_{2.5}$	State	12	7	**No**
	Federal	12	8	**No**

Step 2 – USEPA Significant Impact Level Basis

	Class II EILs	Project Construction	
Impact Parameter	**µg/m³**	**µg/m³**	**Exceed SIL?**
24-hour PM_{10}	5	143	**Yes**
Annual PM_{10}	1	7	**Yes**
24-hour $PM_{2.5}$	5	17	**Yes**

NOTES: AAQS = Ambient Air Quality Standard, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, USEPA = U.S. Environmental Protection Agency, SIL = Significant Impact Level.
[1] Step 1 – the AAQS basis compares the background concentrations plus project contribution to the state and federal AAQS to determine if there would be an exceedance of the respective standard. For PM_{10} and $PM_{2.5}$, background concentrations already exceeded the applicable AAQS (except for annual state and federal $PM_{2.5}$ AAQS), so Step 2 – the SIL basis – compares the project contributions to levels determined by the EKAPCD to cause or contribute to ambient air quality exceedances and impacts.
SOURCE: Dudek, 2018

As shown in Table 3.3-7, Alternative A would result in construction activities that could generate ambient concentration of PM_{10} and $PM_{2.5}$ above applicable thresholds. **Table 3.3-8**, *Alternative A Mitigated Construction Ambient Air Quality Impact Assessment Results*, presents the mitigated construction AAQA.

As demonstrated in Table 3.3-8, PM_{10} and $PM_{2.5}$ emissions would exceed the SIL and could result in short-term unavoidable adverse impacts to visibility in a Class 1 area, even with incorporation of recommended Mitigation Measures MM 3.3-1a through MM 3.3-8a for the solar facility portion of the project site and Mitigation Measures MM 3.3-1b through MM 3.3-6b for the gen-tie portion of the site (see Section 3.3.5 for mitigation measures). Therefore, Alternative A could result in or contribute to a short-term exceedance of the state and federal PM_{10} and $PM_{2.5}$ air quality standards.

Although this would technically not be a NEPA impact, it is Air Force policy to minimize the release of pollutants into the air as much as is technically and economically feasible (Air Force, 2013) so the above-mentioned mitigation measures have been included to reduce potential impacts of the project. As shown, the mitigation measures do significantly reduce the amount of construction emissions the project would emit.

TABLE 3.3-8
ALTERNATIVE A MITIGATED CONSTRUCTION AMBIENT AIR QUALITY IMPACT ASSESSMENT RESULTS[1]

Step 1 – Ambient Air Quality Standard Basis

		AAQS	Maximum Concentration: Project = Background Levels	
Impact Parameter	**Applicable Standard**	**μg/m³**	**μg/m³**	**Exceed AAQS?**
24-hour PM_{10}	State	50	214	**Yes (Step 2)**
	Federal	150	228	**Yes (Step 2)**
Annual PM_{10}	State	20	26	**Yes (Step 2)**
24-hour $PM_{2.5}$	Federal	35	49	**Yes (Step 2)**
Annual $PM_{2.5}$	State	12	6	**No**
	Federal	12	8	**No**

Step 2 – USEPA Significant Impact Level Basis

	Class II EILs	Project Construction	
Impact Parameter	**μg/m³**	**μg/m³**	**Exceed SIL?**
24-hour PM_{10}	5	43	**Yes**
Annual PM_{10}	1	2	**Yes**
24-hour $PM_{2.5}$	5	7	**Yes**

NOTES: AAQS = Ambient Air Quality Standard, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, USEPA = U.S. Environmental Protection Agency, SIL = Significant Impact Level.
These results include incorporation of tier 3 equipment and Rule 402 requirements.
[1] Step 1 – the AAQS basis compares the background concentrations plus project contribution to the state and federal AAQS to determine if there would be an exceedance of the respective standard. For PM_{10} and $PM_{2.5}$, background concentrations already exceeded the applicable AAQS (except for annual state and federal $PM_{2.5}$ AAQS), so Step 2 – the SIL basis – compares the project contributions to levels determined by the SJVAPCD to cause or contribute to ambient air quality exceedances and impacts.
SOURCE: Dudek, 2018

Operation and Maintenance Emissions

Operation and maintenance of Alternative A would result in the emissions of additional criteria air pollutants. Operation and maintenance emissions include long-term emissions that are related to project activities including operational (mobile) source emissions, area (heating, cooling, and structural) emissions, emissions from energy use and off-road vehicle and equipment emissions. **Table 3.3-9**, *Alternative A Estimated Maximum Operational Emissions*, presents the maximum daily and annual source emissions associated with operation (year 2022) of the project. Details of emissions calculations are provided in Appendix B2.

TABLE 3.3-9
ALTERNATIVE A ESTIMATED MAXIMUM OPERATIONAL EMISSIONS

Daily Emissions

	Pollutants (pounds per day)					
Source	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area	1.11	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.11	1.48	1.21	0.01	0.32	0.09
Off-Road	0.71	6.81	6.92	0.01	0.46	0.42
Total Daily Emissions	**1.93**	**8.28**	**8.05**	**0.02**	**0.78**	**0.51**

Annual Emissions

	Pollutants (tons per year)					
Source	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area	0.20	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.20	0.27	0.20	0.00	0.06	0.02
Off-Road	0.00	0.04	0.04	0.00	0.00	0.00
Total Annual Emissions	**0.23**	**0.31**	**0.24**	**0.00**	**0.06**	**0.02**
General Conformity *De Minimis* Level	50	50	100	100	100	100
Exceeds Level?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.
SOURCE: Dudek, 2018

As shown in Table 3.3-9, off-road equipment used during maintenance and testing when operated would be the primary source of daily criteria pollutant emissions. Mobile sources, including employee commutes and maintenance vehicles would be the primary source of criteria air pollutants annually. Based on the projected emissions, operation of Alternative A would not be expected to result in an exceedance of a NAAQS or result in adverse effects on sensitive receptors. In addition, Alternative A would not result in or contribute to a short-term exceedance of a state air quality standard.

Reduced-Visibility Impacts

Operation of the solar power generation system would generate fugitive dust (PM_{10}) emissions. The primary source of fugitive PM_{10} emissions would be from vehicular traffic on unpaved areas around the solar panels. Secondary fugitive PM_{10} emissions may also be generated around the installed solar panels due to the shape and angle of the panels. PM_{10} emissions in the form of fugitive dust pose a potentially serious health hazard, alone or in combination with other pollutants. Compliance with applicable EKAPCD rules and regulations and implementation of the Mitigation Measure MM 3.3-9a for the solar facility portion of the site identified in Section 3.3.5 would further reduce PM_{10} fugitive dust emissions to the extent feasible.

General Conformity

As stated in Section 3.3.2.2, the project area is designated as serious nonattainment of the federal 8-hour ozone standard. The project would be subject to the general conformity regulations if its emissions would exceed the applicable *de minimis* levels. The applicable federal general conformity *de minimis* levels for the ozone precursors ROG and NOx are 50 tons per year and the *de minimis* level for PM_{10} is 100 tons per year. Total annual emissions of ROG and NOx that would be generated during construction and operation of the project are presented above in Tables 3.3-6 and 3.3-8. As indicated in these tables, the ROG, NOx, PM_{10} emissions that would be generated by the project would not exceed the applicable General Conformity *de minimis* levels. Therefore, Alternative A would conform to the SIP and the Air Force would be exempt from performing a conformity determination. General Conformity would not be applicable to Alternative A.

Decommissioning

It is anticipated that the project would operate for 35 years and then be decommissioned. Assuming construction of the project could be completed as early as 2022, decommissioning would begin around 2067 and would occur over a period of approximately 3 calendar years. Given the trend of year over year declining emissions associated with the off-road construction equipment and on-road heavy truck fleets due to the phasing of existing regulation requirements, decommissioning would not be expected to result in a violation of a current national or state ambient air quality standard; however, due to the uncertainty of the air quality conditions and associated regulatory environment in 35 years, the specific effects on air quality related to decommissioning of the project at the time of the decommissioning cannot be assessed now with any certainty.

CEQA: Impact Significance Determination

Impact 3.3-1: The project would conflict with or obstruct implementation of the applicable air quality plan.

In general, a project would not interfere with the applicable air quality plan if it is consistent with growth assumptions used to form the applicable air quality plan and if the project implements all reasonably available and feasible air quality control measures. The consistency with the AQMP is discussed below for construction and operation.

Air quality impacts are controlled through policies and provisions of the EKAPCD, the Kern County General Plan, and the Kern County Code of Building Regulations. The CCAA requires air pollution control districts with severe or extreme air quality problems to provide for a 5 percent reduction in nonattainment emissions per year. Attainment Plans prepared for the EKAPCD comply with this requirement. CARB reviewers approve or amend the documents and forward the plans to the USEPA for final review and approval within the SIP.

Required Evaluation Guidelines

CEQA Guidelines and the CAA (Sections 176 and 316) contain specific references regarding the need to evaluate consistencies between the proposed project and the applicable AQMP for the proposed projects. To accomplish this, CARB has developed a three-step approach to determine project conformity with the applicable AQMP:

1. *Determination that an AQMP is being implemented in the area where the project is being proposed.* EKAPCD's most recently adopted air quality management plan is its Ozone Air Quality Attainment Plan (AQAP) that is approved by CARB and USEPA.
2. *The proposed project must be consistent with the growth assumptions of the applicable AQMP.* The proposed project, as a solar facility, would not introduce land uses that would generate vehicle trips or promote growth in the project area beyond what is projected in the Kern County General Plan and therefore incorporated into the AQAP.
3. *The project must contain in its design all reasonably available and feasible air quality control measures.* The proposed project incorporates various policy and rule-required implementation measures that would reduce related emissions.

Because implementation of the proposed project would not result in additional growth beyond what was anticipated by the Kern County General Plan and incorporated into the AQAP, conclusions may be drawn from the following criteria:

- That the findings of the analysis conducted using Traffic Analysis Zones (TAZ) show that sufficient employment increases are planned for the project area such that new employment opportunities afforded by the project were included in the growth assumption used to develop the AQAP.
- The primary source of emissions from the project would be from construction and operation vehicles that are licensed through the state and whose emissions are already incorporated into CARB's emissions inventory.

Construction

Table 3.3-10, *Alternative A Estimated Maximum Unmitigated Construction Emissions,* and **Table 3.3-11**, *Alternative A Estimated Maximum Mitigated Construction Emissions,* presents the short-term construction emissions for Alternative A that are applicable to the CEQA review. In the unmitigated scenario, Table 3.3-10, short-term construction annual emissions exceed the EKAPCD significance thresholds for NOx and PM_{10}. However, under the mitigated scenario, Table 3.3-11, emissions of NOx would be reduced to below the significance threshold while emissions of PM_{10} would continue to exceed the threshold. Therefore, emissions for PM_{10} would be significant and unavoidable.

TABLE 3.3-10
ALTERNATIVE A ESTIMATED MAXIMUM UNMITIGATED CONSTRUCTION EMISSIONS

Daily Emissions						
	Pollutants (pounds per day)					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	32.58	248.33	224.20	0.62	542.57	65.39
2021	32.38	252.76	229.97	0.67	476.92	58.90
2022	29.04	226.82	214.94	0.66	545.69	64.81
Maximum Daily Emissions	**32.58**	**252.76**	**229.97**	**0.67**	**545.69**	**65.39**
Annual Emissions						
	Pollutants (tons per year)					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	2.05	16.16	14.89	0.04	32.11	4
2021	3.78	30.51	28.30	0.08	55.77	7.06
2022	1.79	14.50	14.02	0.04	30.96	3.87
Maximum Annual Emissions	**3.78**	**30.51**	**28.30**	**0.08**	**55.77**	**7.06**
EKAPCD Significance Threshold	25	25	100	40	15	15
Exceeds Level?	**NO**	**YES**	**NO**	**NO**	**YES**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
Refer to Appendix B2 for details regarding the construction emission estimates.
SOURCE: Dudek, 2018

TABLE 3.3-11
ALTERNATIVE A ESTIMATED MAXIMUM MITIGATED CONSTRUCTION EMISSIONS

Daily Emissions						
	Pollutants (pounds per day)					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	22.48	183.21	234.32	0.62	163.87	24.73
2021	22.47	193.51	242.98	0.67	146.72	23.48
2022	20.07	179.09	229.09	0.66	165.86	25.03
Maximum Daily Emissions	**22.48**	**193.51**	**242.98**	**0.67**	**165.86**	**25.03**
Annual Emissions						
	Pollutants (tons per year)					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	1.39	11.89	15.51	0.04	9.98	1.54
2021	2.57	23.31	29.82	0.08	17.57	2.83
2022	1.21	11.43	14.93	0.04	9.88	1.53
Maximum Annual Emissions	**2.57**	**23.31**	**29.82**	**0.08**	**17.57**	**2.83**
EKAPCD Significance Threshold	25	25	100	40	15	15
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**	**YES**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.
SOURCE: Dudek, 2018

Implementation of Mitigation Measures MM 3.3-1a through MM 3.3-8a for the solar facility portion of the project site and MM 3.3-1b through MM3.3-6b for the gen-tie portion of the site would ensure that all readily available and feasible air quality control measures would be implemented. These mitigation measures would reduce construction fugitive dust, equipment exhaust emissions, and indirect diesel-fueled commercial motor vehicle emissions, and would be implemented in conformance with the applicable EKACPD plans and regulations and Kern County General Plan Policies 20 and 21. Implementation of these measures would reduce NOx emissions to below the threshold, but would not reduce PM_{10} emissions to below the threshold. Therefore, Alternative A would conflict with the AQAP and would result in a significant and unavoidable impact.

Operation and Maintenance

In general, a project would not interfere with the applicable air quality plan if it is consistent with growth assumptions used to form the applicable air quality plan. The land uses designated in the Kern County General Plan forms the basis for the growth assumptions in the air quality plans. Although the project would not be consistent with the existing land use designation in the current Kern County General Plan, it would not introduce a land use that would induce population or housing growth that could result in a substantial increase in vehicle miles traveled and associated criteria pollutant emissions. When compared against the current zoning of the project sites that would allow for the development of residential uses, the proposed solar facility would result in less operational emissions from mobile and area sources that would be generated. The only source of operational emissions associated with the project would be those generated from mobile sources traveling to and from the project area and some limited onsite use of off-road equipment. As shown in **Table 3.3-12**, *Alternative A Estimated Maximum Operational Emissions*, the project's long-term operational emissions would be well below EKAPCD's applicable significance thresholds. Compliance with applicable EKAPCD rules and regulations and implementation of Mitigation Measure MM 3.3-9a for the solar facility portion of the site identified in Section 3.3.5 would further reduce PM_{10} fugitive dust emissions during operation to the extent feasible.

Furthermore, the solar power generation system of the project would also function to reduce the air pollutant emissions within the MDAB to the extent that the power generated is used to offset power production from fossil fueled power plants within (or contributory to) the MDAB. This power production is not projected within the existing air quality plans, and so the solar facility would further aid in reducing air pollutant emissions and increase the potential for attainment of the Ozone AQAP/SIP. Therefore, the project would not conflict with the EKAPCD's Ozone AQAP.

TABLE 3.3-12
ALTERNATIVE A ESTIMATED MAXIMUM OPERATIONAL EMISSIONS

Daily Emissions

	Pollutants (pounds per day)					
Source	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area	1.11	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.11	1.48	1.21	0.01	0.32	0.09
Off-Road	0.71	6.81	6.92	0.01	0.46	0.42
Total Daily Emissions	**1.93**	**8.28**	**8.05**	**0.02**	**0.78**	**0.51**

Annual Emissions

	Pollutants (tons per year)					
Source	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area	0.20	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.20	0.27	0.20	0.00	0.06	0.02
Off-Road	0.00	0.04	0.04	0.00	0.00	0.00
Total Annual Emissions	**0.40**	**0.31**	**0.24**	**0.00**	**0.06**	**0.02**
EKAPCD Significant Threshold	25	25	100	40	15	15
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.
SOURCE: Dudek, 2018

Decommissioning

The project is anticipated to operate for approximately 35 years, after which the land would be converted to other uses in accordance with applicable land use regulations in effect at that time. The project would be required to develop a decommissioning financial plan for review and approval by the Kern County Planning and Natural Resources Department. All decommissioning and restoration activities would adhere to the requirements of the appropriate governing authorities and in accordance with all applicable federal, state, and county regulations. Given the trend of year over year declining emissions associated with the off-road construction equipment and on-road heavy truck fleets, decommissioning would not be expected to result in a violation of a current national or state ambient air quality standard; however, due to the uncertainty of the air quality conditions and associated regulatory environment in 35 years, the exact air quality impacts related to decommissioning of the project at the time of the decommissioning cannot be assessed with any certainty at that time.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Short-term construction-related emissions would exceed the EKAPCD threshold for PM_{10} and could potentially obstruct implementation of an applicable air quality plan. Construction impacts would be significant and unavoidable. Long-term operational impacts would be less than significant and would not obstruct implementation of an applicable air quality plan.

Impact 3.3-2: The project would violate an applicable air quality standard as adopted in (c)i or (c)ii, or as established by EPA or air district or contribute substantially to an existing or project air quality violation.

Construction

As shown in Table 3.3-10, impacts from the project would violate the applicable standard for construction-related NOx and PM_{10}. After mitigation, Table 3.3-11 shows that only emissions for PM_{10} during the third calendar year would exceed the EKAPCD thresholds, causing a significant and unavoidable impact.

Reduced-Visibility Impacts

As demonstrated in Table 3.3-8, PM_{10} and $PM_{2.5}$ emissions would exceed the SIL level and could result in short-term significant and unavoidable impacts to visibility in a Class 1 area, even with incorporation of recommended Mitigation Measures MM 3.3-1a through MM 3.3-8a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the site (see Section 3.3.5 for mitigation measures). Therefore, Alternative A could result in or contribute to a short-term exceedance of the state and federal PM_{10} and $PM_{2.5}$ air quality standards resulting in significant and unavoidable impact resulting in reduced visibility in a Class 1 area.

Operations

Operational emissions would be limited to maintenance activities and vehicle travel by employees to the project site. Table 3.3-12 summarizes the estimated air pollutant emissions associated with operations and maintenance of the project. As shown in Table 3.3-12, operational emissions generated by the proposed project, with incorporation of mitigation measures, would not exceed the thresholds established by the EKAPCD and impacts would be less than significant.

Additionally, the operation of the solar facilities would also create renewable energy over the project's lifespan. This energy would displace the criteria pollutant emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas, coal, and renewable combustion resources), which would further reduce project emissions.

Reduced-Visibility Impacts

Long-term project operations would not include activities or emission sources that would contribute to decreased visibility. Therefore, adherence to EKAPCD rules and regulations would result in less than significant impacts regarding fugitive dust and reduced visibility. Implementation of Mitigation Measure MM 3.3-9a for the solar facility portion of the site, identified in Section 3.3.5, would further reduce PM_{10} fugitive dust emissions during operation to the extent feasible.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Short-term construction-related impacts would be significant and unavoidable. Long-term operational impacts would be less than significant.

Impact 3.3-3: Construction and operation of the project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region (EKAPCD) is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors).

Cumulative Construction

The proposed project is located within the Kern County portion of the MDAB, in an area that is designated as nonattainment for federal and state ozone and state PM_{10} standards and is under the jurisdiction of the EKAPCD. The EKAPCD's approach for assessing cumulative impacts is based on the forecasts of attainment and ambient air quality standards in accordance with requirements of the federal and state clean air acts. Thus, emissions associated with the project would be cumulatively significant if, with mitigation, there remains an increase above the significance threshold of a pollutant for which the MDAB is classified as a nonattainment area (i.e., ozone and PM_{10}). With respect to determining the significance of a project's contribution to regional emissions, Kern County, in its *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* document, states that projects that produce emissions that exceed the adopted thresholds of the EKAPCD for ROG, NOx, and PM_{10} shall be considered significant for a project level and/or cumulatively for impacts to air quality. Thus, based on Kern County's guidance, if an individual project results in air emissions of ROG, NOx, and PM_{10} that exceed the EKAPCD's thresholds for project-specific impacts, then it would also result in a cumulatively considerable net increase of these pollutants for which the project region is in nonattainment under an applicable federal or state ambient air quality standard.

As project construction would result in emissions of ozone precursors (ROGs and NOx) and PM_{10}, and could result in cumulative net increase in these pollutants, impacts of project construction emissions could be cumulatively significant. After mitigation, the project's construction emissions would exceed the EKAPCD annual threshold for PM_{10}. However, as construction activities are temporary and would cease upon completion, construction of the project would not cumulatively contribute on a long-term basis to the air pollution problems in the MDAB. In addition, the County requires that cumulative emissions from all projects within a 6-mile radius be analyzed in the cumulative scenario. There are a number of projects that are located in the vicinity of the proposed project, many of which are also alternative energy (wind and solar) projects. If these projects were constructed at the same time as the project, they would contribute to the current nonattainment status of ozone and PM_{10} within the MDAB, and the impact of the proposed project would be cumulatively considerable.

There are a number of projects within a 6-mile radius that have the potential for overlapping construction schedules, the associated emissions of NOx and PM_{10}, when cumulatively considered, could be above the respective significance thresholds and therefore could result in significant impacts related to the generation of fugitive dust, particulate matter exhaust, and ozone precursors.). However, given the project exceeds EKAPCD standard for construction-related PM_{10} emissions, and the potential for cumulatively considerable impacts associated with construction-related NOx, construction of the project would result in a significant and unavoidable cumulative impact.

Construction Health Impacts from Regional Emissions (Friant Ranch Case)

The accumulation and dispersion of air pollutant emissions within an air basin is dependent upon the size and distribution of emission sources in the region and meteorological factors such as wind, sunlight, temperature, humidity, rainfall, atmospheric pressure, and topography. As expressed in the *amicus curiae* brief submitted for the *Sierra Club v. County of Fresno* case (*Friant Ranch Case*) (SJVAPCD, 2014), the air districts established and recommend CEQA air quality analysis of criteria air pollutants use significance thresholds that were set at emission levels tied to the region's attainment status, based on emission levels at which stationary pollution sources permitted by the air district must offset their emissions. Such offset levels allow for growth while keeping the cumulative effects of new sources at a level that will not impede attainment of the NAAQS. The health risks associated with exposure to criteria pollutants are evaluated on a regional level, based on the region's attainment of the NAAQS. The mass emissions significance thresholds used in CEQA air quality analysis are not intended to be indicative of human health impacts that a project may have (SCAQMD, 2014; SJVAPCD, 2014). Therefore, the project's exceedance of the mass regional emissions threshold (i.e., project construction PM10 exceedance) from project-related activities does not necessarily indicate that the project would cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

As discussed earlier and shown in Table 3.3-1, the southeastern portion of the County, where the project site is located, is currently classified as nonattainment for the federal and state ozone and state PM10 standards, and as attainment and/or unclassified for all of the other criteria pollutant standards (EKAPCD 2017; USEPA 2015). Although ozone would not be directly emitted by construction equipment for the proposed project, the ozone precursors ROG and NO_X would be emitted, as well as, the other criteria pollutants of CO, SO_X, PM_{10} and $PM_{2.5}$. Given that ozone formation occurs through a complex photo-chemical reaction between NO_X and ROG in the atmosphere with the presence of sunlight, the impacts of ozone are typically considered on a basin-wide or regional basis and not on a localized basis.

The health-based ambient air quality standards for ozone are established as concentrations of ozone and not as tonnages of their precursor pollutants (i.e., NO_X and ROG). It is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Because of the complexity of ozone formation and the non-linear relationship of ozone concentration with its precursor gases, and given the state of environmental science modeling in use at this time, it is not practical to determine whether, or the extent to which, a single project's precursor (i.e., NO_X and ROG) emissions would potentially result in the formation of secondary ground-level ozone and the geographic and temporal distribution of such secondary formed emissions. Meteorology, the presence of sunlight, seasonal impacts, and other complex

photochemical factors all combine to determine the ultimate concentration and location of ozone (SCAQMD 2014; SJVAPCD 2014). Running the regional-scale photochemical grid model used for predicting ozone attainment with the emissions from any individual project can be done, but it would not yield reliable information regarding a measurable increase in ozone concentrations sufficient to accurately quantify ozone-related health effects. Similarly, it would also not be feasible to identify a project's impact on the days of nonattainment per year. Furthermore, available models today are designed to determine regional, population-wide health impacts, and cannot accurately quantify ozone-related health impacts caused by ROG or NO_X emissions from a local level (an individual project). Notwithstanding this scientific constraint, CEQA air quality analyses have been using project-level mass-emission thresholds for ozone precursors (NO_X and ROG), PM, and other criteria pollutants, and the disconnect between project-level emissions and project-level health impact cannot be bridged at this time. Based on this information, a general description of the adverse health effects resulting from the project-level criteria pollutants, which is discussed previously, is all that can be feasibly provided at this time.

With respect to emissions of the criteria pollutants of ROG, NO_X, CO, SO_X, and $PM_{2.5}$, project construction emissions would not exceed the EKAPCD significance thresholds, and would be substantially below by an order of magnitude or more; thus, it is not expected that project construction emissions would result in a substantial increase in criteria pollutant concentrations, and their related health effects in the air basin and impacts would be less than significant.

Cumulative Operations

The project would not result in significant operational emissions of criteria pollutants. Operation of the project would result in a positive long-term cumulative benefit related to air quality in the region because it would introduce a non-fossil-fuel-based energy generation. The renewable energy created by the project would also displace the criteria pollutant emissions that would otherwise result from the existing fossil-fuel-powered generation sources. Thus, operation of the project would result in an overall long-term net reduction of emissions by providing electricity that would displace energy produced from fossil fuel combustion. Alternative A would provide a potential reduction of 656,752 metric tons of carbon dioxide equivalent emissions (MT CO_2e) per year if the renewable electricity generated by the project were to be used instead of electricity generated by fossil-fuel sources[5]. Therefore, the project's operational emissions would not be cumulatively considerable, and the associated cumulative impact would be less than significant.

Furthermore, a project's contribution to cumulative impacts can also be evaluated by considering whether the project has been included in the air quality transportation conformity modeling conducted for Kern County. Air quality transportation conformity is a process whereby transportation plans, programs, and projects are evaluated to determine whether they conform to requirements of the 1990 federal CAA Amendments and the applicable SIP. Typically, this analysis is performed for large-scale transportation and development projects that substantially increase the number of vehicle trips in an area on a long-term basis. The project would only generate a substantial number of trips during the short-term construction phase, and only a minimal number of trips during the operations phase for the 10 part-time operational employees. The project would

[5] See Section 3.8, *Greenhouse Gas Emissions*, for more information on energy reduction from the project.

not add housing or employment in excess of the projections included in the Kern County transportation conformity analysis. The project operations would involve minimal new trips during the operations phase and would not alter traffic patterns in the project area. New trips generated during the construction phase would be for a short-term, temporary duration. Therefore, the project would be considered consistent with the most recent Kern County transportation conformity analysis and would not involve cumulative air quality impacts associated with transportation or growth that have not already been included in a conformity analysis.

Operation Localized Health Impacts from Regional Emissions (Friant Ranch Case)

Regulatory agencies have been evaluating impacts of criterial pollutants emissions from a regional level, and today's environmental models are designed to support such regional analysis. As discussed previously, converting project-level criteria pollutants' air quality impact to a resulting human health impact is not practical with today's environmental science models. While operation of the project would emit ozone precursor emissions of ROG and NO_X, because of the complexity of ozone formation and the non-linear relationship of ozone concentration with its precursor gases, and given the state of environmental science modeling in use at this time, it is infeasible to meaningfully convert specific project emissions levels of NO_X or ROG emitted in a particular area to a particular concentration of ozone and resulting human health impact in that area. The same is true for secondary PM, which like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides and NOx. Therefore, a general description of the adverse health effects resulting from the project-level criteria pollutants is all that can be feasibly provided at this time.

With respect to emissions of the criteria pollutants of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$, project operation would not exceed the EKAPCD significance thresholds, and would be substantially below by an order of magnitude or more; thus, it is not expected that project operational emissions would result in a substantial increase in criteria pollutant concentrations and their related health effects in the air basin and impacts would be less than significant.

Cumulative Toxic Air Contaminants

Combined TACs emission impacts from the project and other existing and planned projects are considered cumulatively significant when air quality standards are exceeded. Since the project would not be a significant source of TACs, it is not expected to pose a significant cumulative TAC impact. Since the majority of the projects are also solar plants, TACs would not be considered a significant impact for those projects either. Therefore, TACs impacts would not be cumulatively considerable and impacts would be less than significant.

Cumulative Carbon Monoxide – Mobile Sources

Traffic increases and added congestion caused by a project can combine to cause a CO "Hotspot". There was no traffic study available for this project at the time this analysis was completed. However, no vehicular traffic other than sporadic maintenance, panel washing trucks, and employees are expected and due to the location of the site, potentially impacted intersections and roadway segments are anticipated to operate at a level of service (LOS) of C or better during project operations. Therefore, cumulative CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the project is completed.

Additionally, as the majority of the other projects are also solar plants, traffic would be minimal and would not result in CO "Hotspots". Therefore, CO impacts would not be cumulatively considerable and impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative construction impacts would be significant and unavoidable. Operational impacts would not be cumulatively considerable. TAC and CO impacts would not be cumulatively considerable.

Impact 3.3-4: Construction and operation of the project would expose sensitive receptors to substantial pollutant concentrations.

Toxic Air Contaminants

Construction

A construction HRA was conducted for the project and is included in Appendix B3. As shown in **Table 3.3-13**, *Alternative A Construction Related Health Risk Assessment*, the maximally exposed individual residence (MEIR) would be located directly north of the project boundary along Trotter Avenue. Potential health risks at the MEIR resulting from construction activities are shown in Table 3.3-13.

As depicted in Table 3.3-13, unmitigated project construction would emit TACs that would result in a cancer risk and chronic HI at the MEIR below the EKAPCD thresholds of 10 in a million and 1, respectively. Mitigation would include Tier 3 engines for off-road equipment, which would reduce the DPM and health risk further. Overall, sensitive receptors would not be exposed to substantial TACs due to project construction emissions and impacts would be less than significant.

Operations

Based on the operational HRA results, the MEIR would be located directly north of the project boundary along Trotter Avenue. The potential health risks at the MERI resulting from operational activities are shown in **Table 3.3-14**.

As shown on Table 3.3-14, project operations would emit TACs that would result in cancer risk and chronic HI at the MEIR which are below the EKAPCD thresholds. Therefore, impacts associated with the project's potential to expose sensitive receptors to substantial TACs due to project operational emissions would be less than significant.

TABLE 3.3-13
ALTERNATIVE A CONSTRUCTION HEALTH RISK ASSESSMENT

Receptor	Cancer Risk (per Million)	Chronic Hazard Index
Unmitigated		
MEIR	6.5	0.004

EKAPCD Significance Criteria	10	1
Exceed Threshold?	**NO**	**NO**
Mitigated		
MEIR	4.2	0.003
EKAPCD Significance Criteria	10	1
Exceed Threshold?	**NO**	**NO**

NOTES: MEIR = Maximally Exposed Individual Resident
DPM exposure at receptors was modeled with AERMOD, the results of which were then input into HARP 2 to generate health risk estimates. For the MEIR, exposure was assumed to begin during the third trimester of pregnancy for a duration of 8 hours per day, 5 days per week, for 24 months to account for the short-term construction activity duration. The Mitigated scenario includes Tier 3 engines for off-road equipment.
SOURCE: Dudek, 2018a

TABLE 3.3-14
ALTERNATIVE A OPERATIONAL HEALTH RISK ASSESSMENT

Receptor	Cancer Risk (per Million)	Chronic Hazard Index
Unmitigated		
MEIR	0.09	0.00002
EKAPCD Significance Criteria	10	1
Exceed Threshold?	**NO**	**NO**

NOTES: MEIR = Maximally Exposed Individual Resident
DPM exposure at receptors was modeled with AERMOD, the results of which were then input into HARP 2 to generate health risk estimates. For the MEIR, exposure was assumed to begin during the third trimester of pregnancy for a duration of 8 hours per day, 12 days per year, for 30 years to account for the long-term operational activity duration.
SOURCE: Dudek, 2018a

CO Hotspots

A CO "Hotspot" can occur when vehicles are idling at highly congested intersections. CO hotspots can adversely affect nearby sensitive receptors. The Kern County Planning Department's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* (2006) states that CO hotspots must be analyzed when one of the following conditions occur: (a) a project increases traffic at an intersection or roadway that operates at a level of service LOS E or worse; (b) a project involves adding signalization and/or channelization to an intersection; or (c) sensitive receptors such as residences, schools, hospitals, etc., are located in the vicinity of the affected intersection or signalization.

The majority of project-related traffic would occur during the construction phase. As indicated in Table 3.15-4 (see Section 3.15, *Transportation*), potentially impacted intersections in the project area would operate at LOS of B or better during construction of Alternative A. Therefore, CO "Hotspot" modeling was not conducted for the action alternatives because the project would not result in highly congested intersections. There would be a less-than-significant CO hotspot impact associated with construction of the project.

Valley Fever

The project has the potential to generate substantial amounts of fugitive dust and suspend Valley Fever spores with the dust that could then reach nearby sensitive receptors. During project construction, it is possible that onsite workers could be exposed to spores that cause Valley Fever from fugitive dust generated during construction, which is a potentially significant impact. There is the potential that cocci spores would be stirred up during excavation, grading, and earth-moving activities, exposing construction workers and nearby sensitive receptors to these spores and to the potential of contracting Valley Fever. However, with implementation of Mitigation Measures MM 3.3-10a for the solar facility portion of the project site and MM 3.3-7b and MM 3.3-8b for the gen-tie portion of the project site, the exposure to spores that cause Valley Fever would be minimized. With implementation of this mitigation measure, dust generated from construction of the project would not add significantly to the existing exposure level of people to this fungus, including construction workers, and impacts would be reduced to a less-than-significant level.

Asbestos

Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties associated with the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. However, project site is not located in an area where naturally occurring asbestos is likely to be present (CDCDMG, 2000). Therefore, impacts associated with exposure of construction workers and nearby sensitive receptors to asbestos would be less than significant.

Mitigation Measures

Implement Mitigation Measure MM 3.3-10a for the solar facility portion of the project site and MM 3.3-7b and MM 3.3-8b for the gen-tie portion of the site (see Section 3.3.5 for mitigation measure).

Level of Significance after Mitigation

Impacts would be less than significant.

3.3.3.2 Alternative B: 1,500-Acre EUL

NEPA: General Conformity Analysis

Construction

Implementation of Alternative B includes the construction of a solar facility on 1,500 acres of land located within the same site as Alternative A. It is estimated that the construction duration for Alternative B would be approximately 9 months, which would be 15 months less than Alternative A due to the reduced size of the facility. Alternative B is a 62.5 percent reduction in area as

compared to Alternative A (i.e., 1,500 acres compared to 4,000 acres equals a 62.5 percent reduction). Alternative B would utilize the same gen-tie line route proposed for Alternative A. Unmitigated and mitigated construction emissions by calendar year estimated for Alternative B are described in **Table 3.3-15**, *Alternative B Estimated Maximum Unmitigated Construction Emissions*, and **Table 3.3-16**, *Alternative B Estimated Maximum Mitigated Construction Emissions*, respectively.

Daily and annual unmitigated construction emissions by calendar year were estimated for Alternative B and are described in Table 3.3-15. Emissions from Alternative A were generally reduced by 62.5 percent to determine emissions for Alternative B. However, for construction emissions of Alternative B, as each construction year is 6 months long, Alternative A emissions for 2020 were used for 2020 and Alternative A emissions for 2022 were used for 2021 as each of those was a half a year (those emissions were not reduced by 62.5 percent). As shown in Table 3.3-15, annual construction unmitigated emissions would not exceed *de minimis* levels and the project would not result in an exceedance of the NAAQS.

Table 3.3-16 shows the resulting maximum daily and annual emissions with incorporated project reduction design features, which includes use of tier 3 equipment and compliance with Rule 402, specifically limiting off-road vehicle speed to 15 miles per hour and watering twice daily. As described above for unmitigated construction emissions for Alternative B, as each construction year is 6 months long, Alternative A emissions for 2020 were used for 2020 and Alternative A emissions for 2022 were used for 2021 as each of those was a half a year (those emissions were not reduced by 62.5 percent). As shown in the table, maximum daily and annual emissions of VOC, NOx, PM_{10} and $PM_{2.5}$ were reduced compared to the unmitigated emissions in Table 3.3-15. As shown in Table 3.3-16, annual mitigated construction emissions would not exceed *de minimis* levels and the project would not result in an exceedance of the NAAQS. Alternative B has the same impact as Alternative A, although the amount of emissions is reduced.

TABLE 3.3-15
ALTERNATIVE B ESTIMATED MAXIMUM UNMITIGATED CONSTRUCTION EMISSIONS

Annual Emissions

	Pollutants (tons per year)					
Construction Year	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	0.92	6.83	6.31	0.02	12.08	1.54
2021	0.78	6.33	6.13	0.01	11.87	1.50
Maximum Annual Emissions	**0.92**	**0.83**	**6.31**	**0.02**	**12.08**	**1.54**
General Conformity *De Minimis* Level	50	50	100	100	100	100
Exceeds Level?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
Refer to Appendix B2 for details regarding the construction emission estimates.
SOURCE: ESA 2019

TABLE 3.3-16
ALTERNATIVE B ESTIMATED MAXIMUM MITIGATED CONSTRUCTION EMISSIONS

Annual Emissions

	Pollutants (tons per year)					
Construction Year	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	0.58	5.05	6.62	0.02	3.77	0.61
2021	0.53	5.01	6.55	0.01	3.78	1.45
Maximum Annual Emissions	**0.58**	**5.05**	**6.62**	**0.02**	**3.78**	**1.45**
General Conformity *De Minimis* Level	50	50	100	100	100	100
Exceeds Level?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.
SOURCE: ESA 2019

Reduced-Visibility Impacts

Visibility at offsite locations may be impacted by emissions of airborne PM from short-term construction activities. Federally designated Class I areas are of particular concern. These include many wilderness areas and national parks. In addition, military aircraft use areas within the Upper Mojave Desert region, such as Edwards Air Force Base, Fort Irwin, China Lake Naval Weapons Station, and the R-2508 Airspace Complex are also sensitive to reduced visibility from airborne PM. Visibility impact analyses are intended for stationary sources of emissions which are subject to the PSD requirements in 40 CFR Part 60; they are not usually conducted for area sources. However, because the project would increase PM_{10} emissions, a construction AAQA was conducted to see how project emissions would impact the Class 1 area.

To estimate AAQA emissions for Alternative B, the maximum unmitigated concentrations from Alternative A were reduced by 62.5 percent and added to the background levels and then compared to the AAQS. **Table 3.3-17**, *Alternative B Unmitigated Construction Ambient Air Quality Impact Assessment Results*, presents a summary of the two-step process taken to determine whether construction activities associated with the project would cause or contribute to ambient air quality impacts.

As shown in Table 3.3-17, Alternative B would result in construction activities that could generate ambient concentration of PM_{10} above the applicable 24-hour and annual PM_{10} AAQS and the 24-hour $PM_{2.5}$ AAQS. Alternative B has the same impacts as Alternative A, but generates less emissions. However, it would still result in a short-term unavoidable adverse impact.

Table 3.3-17
ALTERNATIVE B UNMITIGATED CONSTRUCTION AMBIENT AIR QUALITY IMPACT ASSESSMENT RESULTS[1]

Step 1 – Ambient Air Quality Standard Basis

		AAQS	Maximum Concentration: Project = Background Levels	
Impact Parameter	**Applicable Standard**	**µg/m³**	**µg/m³**	**Exceed AAQS?**
24-hour PM_{10}	State	50	224	**Yes (Step 2)**
	Federal	150	237	**Yes (Step 2)**
Annual PM_{10}	State	20	26	**Yes (Step 2)**
24-hour $PM_{2.5}$	Federal	35	48	**Yes (Step 2)**
Annual $PM_{2.5}$	State	12	6	**No**
	Federal	12	8	**No**

Step 2 – USEPA Significant Impact Level Basis

	Class II EILs	Project Construction	
Impact Parameter	**µg/m³**	**µg/m³**	**Exceed SIL?**
24-hour PM_{10}	5	53	**Yes**
Annual PM_{10}	1	3	**Yes**
24-hour $PM_{2.5}$	5	6	**Yes**

NOTES: AAQS = Ambient Air Quality Standard, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, USEPA = U.S. Environmental Protection Agency, SIL = Significant Impact Level.
[1] Step 1 – the AAQS basis compares the background concentrations plus project contribution to the state and federal AAQS to determine if there would be an exceedance of the respective standard. For PM_{10} and $PM_{2.5}$, background concentrations already exceeded the applicable AAQS (except for annual state and federal $PM_{2.5}$ AAQS), so Step 2 – the SIL basis – compares the project contributions to levels determined by the SJVAPCD to cause or contribute to ambient air quality exceedances and impacts.
SOURCE: ESA, 2019

To estimate AAQA emissions for Alternative B, the maximum mitigated concentrations from Alternative A were reduced by 62.5 percent and added to the background levels and then compared to the AAQS. **Table 3.3-18**, *Alternative B Mitigated Construction Ambient Air Quality Impact Assessment Results*, presents a summary of the two-step process taken to determine whether construction activities associated with the project would cause or contribute to ambient air quality impacts.

Table 3.3-18 presents the mitigated construction AAQA. As shown in Table 3.3-18, PM_{10} emissions would exceed the SIL 24-hour PM_{10} level and could result in short-term unavoidable adverse impacts to visibility in a Class 1 area, even with incorporation of recommended Mitigation Measures MM 3.3-1a through MM 3.3-8a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures). Therefore, Alternative B could result in or contribute to a short-term exceedance of the 24-hour state PM_{10} AAQS, similar to Alternative A.

TABLE 3.3-18
ALTERNATIVE B MITIGATED CONSTRUCTION AMBIENT AIR QUALITY IMPACT ASSESSMENT RESULTS

Step 1[1] – Ambient Air Quality Standard Basis

		AAQS	Maximum Concentration: Project = Background Levels	
Impact Parameter	**Applicable Standard**	**µg/m³**	**µg/m³**	**Exceed AAQS?**
24-hour PM_{10}	State	50	187	**Yes (Step 2)**
	Federal	150	200	**Yes (Step 2)**
Annual PM_{10}	State	20	19	**No**
24-hour $PM_{2.5}$	Federal	35	44	**Yes (Step 2)**
Annual $PM_{2.5}$	State	12	6	**No**
	Federal	12	8	**No**

Step 2 – USEPA Significant Impact Level Basis

	Class II EILs	Project Construction	
Impact Parameter	**µg/m³**	**µg/m³**	**Exceed SIL?**
24-hour PM_{10}	5	18	**Yes**
24-hour $PM_{2.5}$	5	2	**No**

NOTES: AAQS = Ambient Air Quality Standard, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, USEPA = U.S. Environmental Protection Agency, SIL = Significant Impact Level.
These results include incorporation of tier 3 equipment and Rule 402 requirements.
[1] Step 1 – the AAQS basis compares the background concentrations plus project contribution to the state and federal AAQS to determine if there would be an exceedance of the respective standard. For PM_{10} and $PM_{2.5}$, background concentrations already exceeded the applicable AAQS (except for annual state and federal $PM_{2.5}$ AAQS), so Step 2 – the SIL basis – compares the project contributions to levels determined by the SJVAPCD to cause or contribute to ambient air quality exceedances and impacts.
SOURCE: ESA, 2019

Operation and Maintenance Emissions

Operation and maintenance of Alternative B would result in the emissions of additional criteria air pollutants. Operation and maintenance emissions include long-term emissions that are related to project activities, including operational (mobile) source emissions, area (heating, cooling, and structural) emissions, emissions from energy use, and off-road vehicle and equipment emissions. **Table 3.3-19**, *Alternative B Estimated Maximum Operational Emissions*, presents the maximum daily and annual source emissions associated with operation (year 2021) of the project. Alternative B operational emissions were estimated using Alternative A operational emissions and reducing them by 62.5 percent.

As shown in Table 3.3-19, off-road equipment used during maintenance and testing when operated would be the primary source of daily criteria pollutant emissions. Mobile sources, including employee commutes and maintenance vehicles would be the primary source of criteria air pollutants annually. Based on the projected emissions, operation of Alternative B would not be expected to result in an exceedance of a NAAQS or result in adverse effects on sensitive receptors. In addition, Alternative B would not result in or contribute to a short-term exceedance of a state air quality standard, similar to Alternative A.

TABLE 3.3-19
ALTERNATIVE B ESTIMATED MAXIMUM OPERATIONAL EMISSIONS

Annual Emissions

	Pollutants (tons per year)					
Source	**VOC (ROG)**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area	0.08	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.08	0.10	0.08	0.00	0.02	0.01
Off-Road	0.00	0.02	0.02	0.00	0.00	0.00
Total Annual Emissions	**0.16**	**0.12**	**0.10**	**0.00**	**0.02**	**0.01**
General Conformity *De Minimis* Level	50	50	100	100	100	100
Exceeds Level?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.
SOURCE: ESA, 2019

Reduced-Visibility Impacts

Operation of the solar power generation system would generate fugitive dust (PM_{10}) emissions. The primary source of fugitive PM_{10} emissions would be from vehicular traffic on unpaved areas around the solar panels. Secondary fugitive PM_{10} emissions may also be generated around the installed solar panels due to the shape and angle of the panels. PM_{10} emissions in the form of fugitive dust pose a potentially serious health hazard, alone or in combination with other pollutants. Compliance with applicable EKAPCD rules and regulations, local zoning codes, and implementation of Mitigation Measure MM 3.3-9a for the solar facility portion of the project site, identified in Section 3.3.5, would further reduce PM_{10} fugitive dust emissions during operation to the extent feasible, similar to Alternative A.

Decommissioning

Decommissioning of the project under Alternative B would not rise above existing USEPA General Conformity thresholds. Like project emissions from construction and operation and maintenance, no pollutants generated from decommissioning activities would exceed the applicable USEPA General Conformity thresholds.

General Conformity

As stated in Section 3.3.2.2, the project area is designated as serious nonattainment of the federal 8-hour ozone standard. The project would be subject to the general conformity regulations if its emissions would exceed the applicable *de minimis* levels. The applicable federal general conformity *de minimis* levels for the ozone precursors ROG and NOx 50 tons per year and the *de minimis* level for PM_{10} is 100 tons per year. Total annual emissions of ROG and NOx that would be generated during construction and operation of the Alternative B are presented above in Tables 3.3-16 and 3.3-18. As indicated in these tables, the ROG, NOx, PM_{10} emissions that would be generated by the project would not exceed the applicable General Conformity *de*

minimis levels. Therefore, Alternative B would conform to the SIP and the Air Force would be exempt from performing a conformity determination. General Conformity would not be applicable to Alternative B.

CEQA: Impact Significance Determination

Construction

Table 3.3-20, *Alternative B Estimated Maximum Unmitigated Construction Emissions,* and **Table 3.3-21**, *Alternative B Estimated Maximum Mitigated Construction Emissions,* present the short-term construction emissions estimated for Alternative B. To estimate construction emissions for Alternative B, the 6-month construction years for Alternative A, 2020 for 2020 and 2022 for 2021, were used as the emissions for construction of Alternative B (those emissions were not reduced by 62.5 percent). Neither the unmitigated nor the mitigated scenarios (Tables 3.3-20 and 3.3-21) would exceed the EKAPCD significance thresholds for all criteria air pollutants. Unlike Alternative A, Alternative B would not result in significant and unavoidable impacts as it would not conflict with the AQMP. Therefore, construction impacts would be less than significant for Alternative B.

TABLE 3.3-20
ALTERNATIVE B ESTIMATED MAXIMUM UNMITIGATED CONSTRUCTION EMISSIONS

Annual Emissions

	Pollutants (tons per year)					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	0.92	6.83	6.31	0.02	12.08	1.54
2021	0.78	6.33	6.13	0.01	11.87	1.50
Maximum Annual Emissions	**0.92**	**6.83**	**6.31**	**0.02**	**12.08**	**1.54**
EKAPCD Significance Threshold	25	25	100	40	15	15
Exceeds Level?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
Refer to Appendix B2 for details regarding the construction emission estimates.
SOURCE: ESA, 2019

TABLE 3.3-21
ALTERNATIVE B ESTIMATED MAXIMUM MITIGATED CONSTRUCTION EMISSIONS

Annual Emissions

	Pollutants (tons per year)					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
2020	0.58	5.05	6.62	0.02	3.77	0.61
2021	0.53	5.01	6.55	0.01	3.78	1.45
Maximum Annual Emissions	**0.58**	**5.05**	**6.62**	**0.02**	**3.78**	**1.45**
EKAPCD Significance Threshold	25	25	100	40	15	15
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.

SOURCE: ESA, 2019

Operation and Maintenance

To estimate operational emissions for Alternative B, Alternative A operational emissions were reduced by 62.5 percent. As shown in **Table 3.3-22**, *Alternative B Estimated Maximum Operational Emissions*, the project's long-term operational emissions would be well below EKAPCD's applicable significance thresholds. Impacts would be similar to Alternative A, but Alternative B would have less emissions overall. As project operational emissions would also not exceed the EKAPCD thresholds, implementation of the project would not obstruct implementation of an air quality plan during operation; therefore, operational impacts would be less than significant. Implementation of Mitigation Measure MM 3.3-9a for the solar facility portion of the site, identified in Section 3.3.5, would further reduce PM_{10} fugitive dust emissions during operation to the extent feasible.

TABLE 3.3-22
ALTERNATIVE B ESTIMATED MAXIMUM OPERATIONAL EMISSIONS

Annual Emissions

	Pollutants (tons per year)					
Source	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area	0.08	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.08	0.10	0.08	0.00	0.02	0.01
Off-Road	0.00	0.02	0.02	0.00	0.00	0.00
Total Annual Emissions	**0.16**	**0.12**	**0.10**	**0.00**	**0.02**	**0.01**
EKAPCD Significant Threshold	25	25	100	40	15	15
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

NOTES: CO = carbon monoxide, NOx = oxides of nitrogen, PM_{10} = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, SOx = sulfur oxides, VOC = volatile organic compounds (ROG).
These results include incorporation of tier 3 equipment and Rule 402 requirements.
SOURCE: ESA 2019

Decommissioning

Decommissioning of the project under Alternative B would be less intensive than construction of the Alternative B would not be expected to exceed EAKPCD significance thresholds.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Short-term construction related impacts and long-term operational impacts would be less than significant.

Impact 3.3-2: The project would violate an applicable air quality standard or contribute substantially to an existing or projected air quality violation.

Construction

As shown in Table 3.3-20, impacts from the project would not violate the applicable standard for construction-related NOx and PM_{10}. Therefore, Alternative B would not violate an applicable air quality standard or contribute to an existing or projected air quality violation.

Reduced-Visibility Impacts

As demonstrated in Table 3.3-18, PM_{10} emissions would exceed the SIL level and could result in short-term significant and unavoidable impacts to visibility in a Class 1 area, even with incorporation of recommended Mitigation Measures MM 3.3-1a through MM 3.3-8a for the solar facility portion of the project site and MM 3.3-1b and MM 3.3-6b for the gen-tie portion of the site (see Section 3.3.5 for mitigation measures). Therefore, Alternative B could result in or contribute to a short-term exceedance of the state and federal $PM_{10\ 5}$ air quality standards resulting in significant and unavoidable impact resulting in reduced visibility in a Class 1 area.

Operations

Operational emissions would be limited to maintenance activities and vehicle travel by employees to the project site. Table 3.3-22 summarizes the estimated air pollutant emissions associated with operations and maintenance of the project. As shown in Table 3.3-22, operational emissions generated by the proposed project, with incorporation of mitigation measures, would not exceed the thresholds established by the EKAPCD and impacts would be less than significant.

Reduced-Visibility Impacts

Long-term project operations would not include activities or emission sources that would contribute to decreased visibility. Therefore, adherence to EKAPCD rules and regulations would result in less than significant impacts regarding fugitive dust and reduced visibility. Implementation of Mitigation Measure MM 3.3-9a for the solar facility portion of the site, identified in Section 3.3.5, would further reduce PM_{10} fugitive dust emissions during operation to the extent feasible.

Decommissioning

Decommissioning of the project under Alternative B would be less intensive than construction of the Alternative B would not be expected to violate an applicable air quality standard or contribute to an existing or projected air quality violation.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Short-term construction-related impacts and long-term operational impacts would be less than significant.

Impact 3.3-3: Construction and operation of the project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region (EKAPCD) is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors).

Alternative B resulted in no construction or operational emissions exceeding the EKAPCD's thresholds for project-specific impacts. Therefore, impacts would less than significant and would not be cumulatively considerable. Alternative B would provide a potential reduction of approximately 246,282 MT CO_2e per year if the renewable electricity generated by the project were to be used instead of electricity generated by fossil-fuel sources[6].

Cumulative Toxic Air Contaminants

Since Alternative B would not be a significant source of TACs, it is not expected to pose a significant cumulative TAC impact. Since the majority of the cumulative projects are also solar plants, TACs would not be considered a significant impact for those projects either. Therefore, TACs impacts would not be cumulatively considerable and impacts would be less than significant.

Cumulative Carbon Monoxide – Mobile Sources

Traffic increases and added congestion caused by a project can combine to cause a CO "Hotspot". There was no traffic study available for this project at the time this analysis was completed. However, no vehicular traffic other than sporadic maintenance, panel washing trucks, and employees are expected and due to the location of the site, potentially impacted intersections and roadway segments are anticipated to operate at a LOS of C or better during project operations. Therefore, cumulative CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the project is completed. Additionally, as the majority of the other projects are also solar plants, traffic would be minimal and would not result in CO "Hotspots". Therefore, CO impacts would not be cumulatively considerable and impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative construction and operational impacts would not be cumulatively considerable. TAC and CO impacts would also not be cumulatively considerable.

Impact 3.3-4: Construction and operation of the project could expose sensitive receptors to substantial pollutant concentrations.

Toxic Air Contaminants

A construction and operational HRA was conducted for Alternative A. The results showed that the project would result in a cancer risk and chronic HI at the MEIR below the EKAPCD thresholds of

6 See Section 3.8, *Greenhouse Gas Emissions*, for a more detailed analysis.

10 in a million and 1, respectively. Therefore, sensitive receptors would not be exposed to substantial TACs due to project construction emissions and impacts would be less than significant. Since Alternative A had less than significant impacts, it can be assumed that Alternative B would also have less than significant impacts since the project size is reduced by 62.5 percent.

CO Hotspots

Since Alternative A resulted in less than significant CO hotspot impacts associated with construction of the project, Alternative B would also be expected to result in less than significant impacts as it is a reduced project which would require less haul trucks

Valley Fever

The project has the potential to generate substantial amounts of fugitive dust and suspend Valley Fever spores with the dust that could then reach nearby sensitive receptors. However, with implementation of Mitigation Measures MM 3.3-10a for the solar facility portion of the project site and MM 3.3-7b and 3.3-8b for the gen-tie portion of the site, the exposure to spores that cause Valley Fever would be minimized. With the implementation of this mitigation measure, dust generated from construction of the project would not add significantly to the existing exposure level of people to this fungus, including construction workers, and impacts would be reduced to a less-than-significant level.

Asbestos

The project site is not located in an area where naturally occurring asbestos is likely to be present (CDCDMG, 2000). Therefore, impacts associated with exposure of construction workers and nearby sensitive receptors to asbestos would be less than significant.

Mitigation Measures

Implement Mitigation Measure MM 3.3-10a for the solar facility portion of the project site and MM 3.3-7b and 3.3-8b for the gen-tie portion of the site. (see Section 3.3.5 for mitigation measure).

Level of Significance after Mitigation

Impacts would be less than significant.

3.3.3.3 Alternative C: No Action / No Project

NEPA: General Conformity Determination

Under Alternative C, none of the components under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described previously. There would be no construction vehicles or site operations that would generate air pollutants; therefore, there would be no potential for impacts on air quality.

CEQA: Impact Significance Determination

Alternative C would result in no impacts to air quality since the project would not be built. However, Alternative C would not provide the potential reduction of carbon dioxide equivalent emissions that Alternative A (656,752 MT CO_2e) and Alternative B (246,282 MT CO_2e) would provide.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No impacts

3.3.4 Cumulative Impact Analysis

3.3.4.1 NEPA: General Conformity Analysis

The geographic scope for cumulative air quality impacts used in this analysis includes projects requiring ground-disturbing activities within a 1- and 6-mile radius of the project site. In summary, there are several alternative energy (wind and solar) projects that are currently undergoing the environmental review process. As discussed under Impact 3.3-3, if it is assumed that these projects were constructed at the same time as the proposed project, construction activities would contribute emissions of criteria pollutants due to grading activities and the use of heavy-duty diesel equipment. The construction emissions from the simultaneous construction of multiple cumulative projects in conjunction with the proposed project could result in the exceedance of USEPA's General Conformity thresholds.

In particular, of the 90 projects evaluated for cumulative effects in conjunction with the proposed project, 6 projects are known to be of equal or greater size than the proposed project (requiring at least 4,000 acres of land area). These include the Antelope Valley Solar Project by Renewable Resources Group, the Fremont Valley Preservation Water Bank and Solar Project, the Alta Infill II Wind Energy Project, the Alta-Oak Creek Mojave Project, the Avalon Wind Energy Project, and the Catalina Renewable Energy Project. In addition to a cumulative increase of criteria pollutants and their precursors, other impacts that may occur from construction include reduced visibility during high wind events.

Given that the project area is currently in nonattainment of NAAQS for ozone, which represents an existing adverse condition, the cumulative effects due to construction of the project in conjunction with the related past, present, or reasonably foreseeable probably future projects would also be considered to be adverse.

However, even though the proposed project's contribution of construction-related emissions to cumulative impacts would be adverse, construction of the project would not cumulatively contribute on a long-term basis to the air pollution problems in the MDAB. In addition, operation of the project and the other renewable cumulative projects would offset emissions of criteria pollutants that would otherwise occur from consumption of fossil fueled-generated electricity from the grid. It should be noted that the displacement of criteria air pollutant emissions may not occur within the same air basin as the project and would depend upon the location of the fossil fuel facility(s) that the project would displace. Cumulative impacts resulting from the combination of operation of the proposed project in conjunction with the related past, present, or reasonably foreseeable probable future projects would not be adverse.

In summary, adverse cumulative impacts from the proposed project, when considered with existing and reasonably foreseeable planned projects would occur during construction but not during operation of the proposed project.

3.3.4.2 CEQA: Cumulative Impact Significance Determination

In accordance with Kern County's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* (2006), geographic scope for cumulative air quality impacts includes projects within a 1- and 6-mile radius of the project site. Kern County's Guidelines require three steps for estimating the potential significance of cumulative impacts: (1) evaluate localized impacts (Guideline Instruction 16a); (2) evaluate consistency with existing air quality plans (Guideline Instruction 16b); and (3) summarize CARB air basin emissions (Guideline Instruction 16c). This analysis was provided in Impact 3.3-3.

Emissions from the simultaneous construction of multiple cumulative projects in conjunction with the proposed project could result in an exceedance of EKAPCD's annual and/or daily significance thresholds. Given that the project area is currently nonattainment of state standards for ozone and PM_{10}, which represents an existing adverse condition, and since the proposed project's construction emissions would exceed the EKAPCD annual threshold for PM_{10}, the proposed project's contribution to air quality impacts related to construction would be cumulatively considerable, and the associated cumulative impact as it relates to CEQA would be significant and unavoidable even with implementation of Mitigation Measures MM 3.3-1a through MM3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the site.

With regard to consistency with existing air quality plans, it was determined that the project would comply with the EKAPCD's AQMP as it would not generate population, residences, or substantial employment that would interfere with the County's adopted growth forecast. When compliance with applicable rules (such as the EKAPCD's required emissions controls) are considered, the project's regional contribution to cumulative air quality impacts would be almost negligible, representing a less-than-significant cumulative impact.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project site (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be significant and unavoidable for construction.

3.3.5 Mitigation Measures

3.3.5.1 Solar Facility Mitigation Measures

MM 3.3-1a: Fugitive Dust Control Measures. The project proponent shall ensure construction of the project shall be conducted in compliance with applicable rules and regulations set forth by the Eastern Kern Air Pollution Control District. Dust control measures outlined below shall be implemented where they are applicable and feasible. The list shall not be considered all-inclusive

and any other measures to reduce fugitive dust emissions may be required by appropriate agencies to respond to urgent issues on site:

1. Land Preparation, Excavation and/or Demolition. The following dust control measures shall be implemented:
    a. All soil being actively excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas. Watering shall take place a minimum of three times daily on disturbed soil areas with active operations, unless dust is otherwise controlled by rainfall or use of a dust suppressant.
    b. After active construction activities, soil shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods.
    c. All unpaved construction and operation/maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent.
    d. All clearing, grading, earth moving, and excavation activities shall cease during periods of winds greater than 25 miles per hour (averaged over one hour), or when dust plumes of 20% or greater opacity impact public roads, occupied structures, or neighboring property or as identified in a plan approved by the Eastern Kern Air Pollution Control District.
    e. All trucks entering or leaving the site will cover all loads of soils, sands, and other loose materials, or be thoroughly wetted with a minimum freeboard height of six inches.
    f. Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times.
    g. Stockpiles of soil or other fine loose material shall be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust.
    h. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.
    i. Prior to construction, wind breaks (such as chain-link fencing including a wind barrier) shall be installed where appropriate.
    j. Where acceptable to the Kern County Fire Department, weed control shall be accomplished by mowing instead of disking, thereby, leaving the ground undisturbed and with a mulch covering.
    k. The project operator shall generally avoid grading except when elevation changes exceed design requirements.
    l. When grading is unavoidable, it is to be phased and done with the application of approved chemical dust palliatives that stabilize the earth.
    m. Where ground is cleared, plant roots must be left in place where possible to stabilize the soil.
2. Site Construction. After active clearing, grading, and earth moving is completed within any portion of the site, the following dust control practices shall be implemented:
    a. Dust suppressant shall be used on the same day or day immediately following the cessation of activity for a particular area where further activity is not planned.

b. Dependent on specific site conditions (season and wind conditions), revegetation shall occur in those areas where planned after installation of the solar panels.

c. All unpaved road areas shall be treated with a dust suppressant or graveled to prevent excessive dust.

d. The project operator shall use dust suppression measures during road surface preparation activities, including grading and compaction.

e. Final road surfaces must be stabilized to achieve a measurable threshold friction velocity (TFV) equal to or greater than 100 centimeters per second (cm/S) or a surface that is greater than or equal to 10 percent of non-erodible elements such as rocks or stones.

f. Wind barrier fencing or screening shall be installed, when appropriate.

3. Vehicular Activities. During all phases of construction, the following vehicular control measures shall be implemented:

a. On-site vehicle speed shall be limited to 15 miles per hour on unpaved areas within the project site. Vehicles may travel up to 25 miles per hour on stabilized unpaved roads (application of palliatives, gravel, etc. that reduces the erosion potential of the soil) as long as such speeds do not create visible dust emissions.

b. Visible speed limit signs shall be posted at main ingress point(s) on site and posted at least every 500 feet, readable in both directions of travel along unpaved roads.

c. All areas with vehicle traffic such as the main entrance roadway to the project site shall be graveled or treated with dust palliatives so as to prevent track-out onto public roadways.

d. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least 6 inches of freeboard.

e. Streets adjacent to the project site shall be kept clean, and project-related accumulated silt shall be removed on at a minimum of once daily, or as necessary to prevent substantial offsite fugitive dust releases. The use of either dry rotary brushes (unless prior wetting) or blower devices is prohibited.

f. Access to the site shall be by means of an apron into the project site from adjoining surfaced roadways. The apron shall be surfaced or treated with dust suppressants. If site soils cling to the wheels of the vehicles, then a grizzly, wheel-washer, or other such device shall be used on the road exiting the project site, immediately prior to the pavement, to remove most of the soil material from vehicle tires.

MM 3.3-2a: Grading Plan. Prior to the issuance of grading or building permits, the project proponent shall provide a comprehensive Phased Grading Plan for review by the Air Force and Kern County Planning and Natural Resources Department to reduce fugitive dust emissions resulting from wind erosion at the site. The Phased Grading Plan shall:

1. Identify a comprehensive grading schedule for the entire project site which demonstrates the following:

a. Minimal Grading. Grading shall be minimized to limit the removal of topsoil and creation of loose soils. Only in areas where drainage improvements, structural

foundations (e.g. inverter/transformer pads), service roads, and leveling of severe grades need to occur will grading that removes and recompacts the soil surface occur. Dust palliatives and water shall be immediately applied following any grading.

b. Dust Palliatives. Application of dust palliatives or water shall be applied throughout project construction when required to help reduce dust, especially during periods of high winds, and shall include use of (1) an eco-safe, biodegradable, liquid copolymer shall be used to stabilize and solidify any soil; and (2) A hydro mulch mixture composed of wood fiber mulch and an Environ-Mend binder may also be applied, where real-time weather conditions dictate that additional measures are necessary.

c. Water Suppression. Water trucks shall transit across the project site and construction access roads to suppress the fugitive dust from disturbed soils on roads and active working areas on a regular and as needed basis.

2. Minimize all grading activities to those areas necessary for project access and installation of solar panels and other associated infrastructure associated with the solar facility. Construction shall commence on areas that have undergone initial grading within 20 calendar days or sufficient dust control measures shall be put in place to minimize fugitive dust emissions.

3. Identify, in addition to those measures required by the Eastern Kern Air Pollution Control District, all measures being undertaken during construction activities and operational activities to ensure dust being blown off site is minimized. Measure may include, but are not limited to:

a. Increased use of water and or use of dust suppressant.

b. Pre-seeding and/or use of wood chips as permitted by the EKAPCD

c. Construction of dust screening around the project site.

d. Limit work hours to days where the wind speed is below 25 miles per hour. Implement High Wind Event Dust Plan approved by EKAPCD if performing in high winds including additional minimization measures.

e. Obtain and Implement all requirements of the EKAPCD Dust Plan and/or Permit which may include monitoring of offsite emissions.

4. After construction is complete, the owner or operator of the site shall ensure the following activities are maintained to reduce dust generation during normal operations.

a. Sites undergoing weed abatement activity shall not disrupt the soil to the extent that visible dust is carried by wind except where weed abatement is directed by a fire prevention/control agency.

b. Travel on unpaved roads will be limited to fewer than 25 vehicle trips per day and at speeds between 5 and 35 miles per hour unless dust palliatives or frequent water is applied to the road surface.

5. Measures needed to control emissions from vehicle and equipment exhaust are to comply with the following:

a. All stationary and portable engines must be certified to the appropriate EPA Tier rating and CARB Executive Order emission standards. All new stationary and portable engines (including off-road equipment) must meet Tier IV emissions rating.

b. CARB Fleet requirements for in-use off road equipment rated 25 hp or greater (construction equipment) and on-road diesel fueled vehicles with a gross vehicle

weight greater than 10,000 pounds (semis, trucks, buses) shall limit idling to no more than 5 minutes when not actively in use. A vehicle may be allowed to idle for longer periods provided idling is necessary for safe operation of the vehicle or safety of the vehicle operator (emergency vehicles, air conditioning during excessive heat warnings, heating when temperature is below freezing).

c. The equipment must be registered under Portable Equipment Registration Program (PERP) or Diesel Off-road Online Reporting System (DOORS) or maintain a local permit. The proponent/contractor shall be responsible for maintaining PERP/DOORS registration and notifying the Air Pollution Control District of any portable engines or generators on site.

d. All equipment and vehicles shall only use gasoline, diesel, or alternative fuels that meet California Air Resources Board (CARB) certification specifications for ultra-low sulfur content and aromatic hydrocarbon content requirements.

MM 3.3-3a: Construction Equipment Standards. The project proponent and/or its contractors shall implement the following measures during construction of the project to reduce equipment exhaust:

1. All equipment shall be maintained in accordance with the manufacturer's specifications.
2. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five minutes.
3. Electric equipment shall be used whenever possible in lieu of diesel or gasoline-powered equipment.
4. Use only gasoline, diesel, or alternative fuels that meet CARB certification specifications for ultra-low sulfur content and aromatic hydrocarbon content requirements.
5. All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOx emissions.
6. On-road and off-road diesel equipment shall use diesel particulate filters (or the equivalent) if permitted under manufacturer's guidelines, or maintain and use all control equipment as listed on the CARB Executive Order for the engine as issued pursuant to 13 CCR 2420.
7. Prohibit the use of heavy-equipment during first- or second-stage smog alerts and suspend all construction activities during second-stage smog alerts.
8. Utilize existing power sources (i.e., power poles) when available. This measure would minimize the use of higher polluting gas or diesel generators.
9. Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use to the extent feasible. Require that trucks and vehicles in loading or unloading queues have their engines turned-off when not in use.
10. Off-road equipment engines over 50 horsepower shall be Tier 2 certified or higher (unless Tier 2 equipment has been determined to not be available).
11. No vehicle or engines may idle for more than 5 consecutive minutes except to ensure safe operation of the vehicle or safety of the vehicle operator.
12. All construction-related equipment rated higher than 25hp, including heavy-duty equipment, motor vehicles, and portable equipment, shall have current registration (PERP of DOORS) with CARB or local air permits.

MM 3.3-4a: On-site Idling Standards. These measures should be required to ensure the reduction of public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles:

1. The driver shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location.

MM 3.3-5a: Dust Control. The project proponent shall continuously comply with the following measures to control fugitive dust emissions during project operations and construction activities:

1. Increase handling moisture content of graded soils from the typical of 15 percent to 20 percent during construction activities.
2. Reduce speed of road grading by motor graders and rollers from typical 7.1 miles per hour (mph) to 5 mph.
3. Prior to construction, onsite roads that will have the greatest extent of onsite travel shall be graveled.
4. Use a dust suppressant such as magnesium chloride, polymer, or similar, to the extent feasible, including on gravel roads.

MM 3.3-6a: Onsite Emissions Control. The project proponent shall continuously comply with the following measures during construction and operations to control emissions from onsite dedicated equipment (equipment that would remain onsite each day):

1. All onsite off-road equipment and on-road vehicles for operation and maintenance shall meet the recent CARB engine emission standards or alternatively fueled construction equipment, such as compressed natural gas, liquefied gas, or electric, as appropriate. Use only gasoline, diesel, or alternative fuels that meet CARB certification specifications for ultra-low sulfur content and aromatic hydrocarbon content requirements.
2. All equipment shall be turned off when not in use, where feasible. Engine idling of all equipment shall be minimized to less than five minutes excepting safety requirements.
3. All equipment engines shall be maintained in good operating condition and in tune per manufacturer's specification.

MM 3.3-7a: Coating Requirements. The developer shall comply with**:**

1. The provisions of Eastern Kern Air Pollution Control District Rule 410.1A – Architectural.
2. Coatings, during the construction of all buildings and facilities. Application of architectural coatings shall be completed in a manner that poses the least emissions impacts whenever such application is deemed proficient.
3. The developer shall comply with the provisions of Eastern Kern Air Pollution Control District Rule 410.5 during the construction and pavement of all roads and parking areas within the Project area. Specifically, the developer shall not allow the use of:
    a. Rapid-cure cutback asphalt
    b. Medium-cure cutback asphalt
    c. Slow-cure cutback asphalt; and
    d. Emulsified asphalt.

MM 3.3-8a: Erosion Control Measures. The project proponent shall implement the following wind erosion reduction measures to comply with EKAPCD Rules 401 and 402 during strong wind events.

1. Sand fences shall be used to capture sand deposits caused by wind erosion in the southwest portion of the project site. Sand fences should be placed to protect structures, including residences, and other amenities from wind-blown sand. In particular, sand fencing should be placed along Trotter Avenue.
2. Install permanent fencing with a minimum 50 percent porosity and at least six feet in height in those areas immediately west and west-southwest of permanent existing residences prior to vegetation removal/soil disturbance within 1,000 feet of the residence.
3. In areas where grading will occur, temporary construction fences (with minimum 50 percent porosity and at least four feet high) shall be installed every 200-300 feet perpendicular to the prevailing wind in a manner to reduce fugitive dust from leaving the area being graded. Depending on the use and effectiveness of water and dust suppressants, install additional temporary fencing with tighter spacing as necessary.

MM 3.3-9a: Operational/Permanent Wind Erosion Reduction. The project proponent shall continuously comply with the following measures during operation to control wind erosion:

1. Install permanent fencing with a minimum 50% porosity and at least 6 feet in height along the project boundary along Lone Butte and Trotter. If significant sand movement is observed on site, additional sand fences should be placed within the site to reduce movement and protect on-site structures, including photovoltaic arrays, from wind-blown sand. As sand deposits grow, the sand deposits shall be planted with vegetation to reduce further erosion.
2. Prepare and submit a Fugitive Dust Emission Control Plan pursuant to EDAPCD Rule 402 Section V.D.
3. Apply for and obtain EKAPCD Authority to Construct / Permit to Operate prior to conducting any work on the project site.
4. Prepare a Fugitive Dust Emission Monitoring Plan, which shall include installation of on-site PM_{10} air monitors for a minimum of five years, as required by EKAPCD, to ensure effectiveness of dust mitigation measures or propose alternative PM monitoring plan using EPA Method 9 Visible Emissions Evaluation or other approved opacity monitoring methods. Per EKAPCD guidelines, the operator of a facility may petition to cancel District PTO, in the event that 5years of data demonstrate" (upwind/downwind concentration difference is 50-µg/m3 or less [based on one-hour averages]).

MM 3.3-10a: Valley Fever. Prior to ground disturbance activities, the project proponent shall provide a "Valley Fever Training Information Packet" and conduct training sessions for all construction personnel. A copy of the handout and a schedule of education sessions shall be provided to the Kern County Planning and Natural Resources Department. All evidence of the training session(s) and handout(s) shall be submitted to the Kern County Planning and Natural Resources Department on a monthly basis. Multiple training sessions may be conducted if different work crews come to the site for different stages of construction; however, all construction personnel shall be provided training prior to beginning work. The evidence submitted to the Kern County Planning and Natural Resources Department regarding the "Valley Fever Training Handout" and Session(s) shall include the following:

1. A sign-in sheet (to include the printed employee names, signature, and date) for all employees who attended the training session.
2. Distribution of an information packet that includes educational information regarding the health effects of exposure to criteria pollutant emissions and Valley Fever; symptoms of exposure; and instruction for reporting cases of flu-like or respiratory illness symptoms to the Site Safety Officer. Those with persistent systems lasting more than 3 days shall be recommended to seek immediate medical advice.
3. Training on methods that may help prevent Valley Fever infection.
4. A demonstration to employees on how to use personal protective equipment, such as respiratory equipment (masks), to reduce exposure to pollutants and facilitate recognition of symptoms and earlier treatment of Valley Fever. Though use of the equipment is not mandatory during work, the equipment shall be readily available and shall be provided to employees for use during work, if requested by an employee. Proof that the demonstration is included in the training shall be submitted to the county. This proof can be via printed training materials/agenda, DVD, digital media files, or photographs.

3.3.5.2 Gen-tie Mitigation Measures

MM 3.3-1b: Fugitive Dust Control Measures. The project proponent shall ensure construction of the generation tie-lines shall be conducted in compliance with applicable rules and regulations set forth by the Eastern Kern Air Pollution Control District. Dust control measures outlined below shall be implemented where they are applicable and feasible. The list shall not be considered all-inclusive and any other measures to reduce fugitive dust emissions may be required by appropriate agencies to respond to urgent issues on site:

1. Land Preparation, Excavation and/or Demolition. The following dust control measures shall be implemented:
    a. All soil being actively excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas. Watering shall take place a minimum of three times daily on disturbed soil areas with active operations, unless dust is otherwise controlled by rainfall or use of a dust suppressant.
    b. After active gen-tie construction activities, soil shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods.
    c. All unpaved construction and site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent.
    d. All clearing, grading, earth moving, and excavation activities shall cease during periods of winds greater than 20 miles per hour (averaged over one hour), or when dust plumes of 20% or greater opacity impact public roads, occupied structures, or neighboring property or as identified in a plan approved by the Eastern Kern Air Pollution Control District.
    e. All trucks entering or leaving the site will cover all loads of soils, sands, and other loose materials, or be thoroughly wetted with a minimum freeboard height of one foot.
    f. Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times.
    g. Stockpiles of soil or other fine loose material shall be stabilized by tarp covering, watering or other appropriate method to prevent wind-blown fugitive dust.

h. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds or covered with tarps.

i. Prior to gen-tie construction, wind breaks (such as chain-link fencing including a wind barrier) shall be installed in areas where appropriate.

j. Where acceptable to the Kern County Fire Department, weed control shall be accomplished by mowing instead of disking, thereby, leaving the ground undisturbed and with a mulch covering.

k. When grading is unavoidable, it is to be phased and done with the application of a non-toxic soil stabilizer or soil weighting agent, or alternative soil stabilizing methods.

l. Where feasible, plant roots shall be left in place to stabilize the soil.

m. Reduce and/or phase the amount of the disturbed area (e.g., grading, excavation) where possible.

2. Generation tie-line construction. After active clearing, grading, and earth moving is completed within any portion of the tie-line routes, the following dust control practices shall be implemented:

a. Dust suppressant shall be used on the same day or day immediately following the cessation of activity for a particular area where further activity is not planned.

b. Dependent on specific site conditions (season and wind conditions), revegetation shall occur in those areas where planned after installation of the generation tie-lines.

c. All unpaved road areas used for gen-tie construction or decommissioning shall be treated with a dust suppressant or graveled to prevent excessive dust.

d. The project proponent shall use dust suppression measures during road surface preparation activities, including grading and compaction.

e. Final road surfaces must be stabilized to achieve a measurable threshold friction velocity (TFV) equal to or greater than 100 centimeters per second (cm/S).

f. Wind barrier fencing or screening shall be installed, when appropriate.

3. Vehicular Activities. During all phases of generation tie-line construction, the following vehicular control measures shall be implemented:

a. On-site vehicle speed shall be limited to 10 miles per hour on unpaved areas within the generation tie-line areas. Vehicles may travel up to 25 miles per hour on stabilized unpaved roads (application of palliatives, gravel, etc. that reduces the erosion potential of the soil) as long as such speeds do not create visible dust emissions.

b. Visible speed limit signs shall be posted at main ingress point(s) on generation tie-line sites.

c. All areas with vehicle traffic such as the main entrance roadway to the generation tie-line installation sites shall be graveled or treated with dust palliatives so as to prevent track-out onto public roadways.

d. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

e. Streets used by the project during generation tie-line installation shall be kept clean, and project-related accumulated silt shall be removed on at a minimum of once daily, or as necessary to prevent substantial offsite fugitive dust releases. The use of either dry rotary brushes (unless prior wetting) or blower devices is prohibited.

f. Access to the generation tie-line installation sites shall be by means of an apron into the tie-line sites from adjoining surfaced roadways. The apron shall be surfaced or treated with dust suppressants. If site soils cling to the wheels of the vehicles, then a grizzly, wheel-washer, or other such device shall be used on the road exiting the tie-line sites, immediately prior to the pavement, to remove most of the soil material from vehicle tires.

g. If site soils cling to the wheels of the vehicles, then a track out control device or other such device shall be used on the road exiting the generation tie line site, immediately prior to the pavement, to remove most of the soil material from vehicle tires.

MM 3.3-2b: Grading Plan. Prior to the issuance of grading or building permits, the project proponent shall provide a comprehensive generation tie-line Phased Grading Plan for review by the Kern County Planning and Natural Resources Department to reduce fugitive dust emissions resulting from wind erosion at the site. The Phased Grading Plan shall:

1. Identify a comprehensive grading schedule for the entire generation tie-line routes which demonstrates the following:

   a. **Minimal Grading**. Grading shall be minimized to limit the removal of topsoil and creation of loose soils. Only in areas where drainage improvements, structural foundations, service roads, and leveling of severe grades need to occur will grading that removes and recompacts the soil surface occur. Water and/or dust palliatives shall be immediately applied following any grading. Construction (installation of posts, roads, etc.) shall commence on areas that have undergone initial ground disturbance or grading within 20 calendar days.

   b. **Dust Suppression:** Application of water and/or dust palliatives shall be applied on an as-needed basis throughout generation tie-line construction to help reduce dust, especially during periods of high winds, and shall include use of (1) an eco-safe, biodegradable, liquid copolymer shall be used to stabilize and solidify any soil; and (2) A hydro mulch mixture composed of wood fiber mulch and an Environ-Mend binder may also be applied, where real-time weather conditions dictate that additional measures are necessary.

   c. **Water Suppression**. Water trucks shall transit across the generation tie line routes and construction access roads to suppress the fugitive dust from disturbed soils on roads and active working areas on a regular and as needed basis.

2. Minimize all grading activities to those areas necessary for project access and installation of generation tie lines. Construction shall commence on areas that have undergone initial grading within 20 calendar days.

3. Identify, in addition to those measures required by the Eastern Kern Air Pollution Control District, all measures being undertaken during generation tie-line construction activities to ensure dust being blown off site is minimized. Measure may include, but are not limited to:

   a. Increased use of water and or use of dust suppressant.

   b. Pre-seeding and/or use of wood chips as permitted by the EKAPCD

c. Construction of dust screening around the generation tie-line site.

4. **Revegetation Plan.** A Revegetation Plan shall be submitted for approval to the Kern County Planning and Natural Resources Department (per MM 3.1-1b). To minimize long term dust issues from the project, the generation tie-line routes shall be revegetated (consistent with existing site conditions). Root balls shall be maintained during vegetation clearing to maintain soil stability and ultimately vegetation re-growth following construction of routes. Following construction completion of generation tie-line routes, the gen-tie areas shall be re-seeded with native vegetation

MM 3.3-3b: Construction Equipment Standards. The project proponent and/or its contractors shall implement the following measures during construction of the project:

1. All equipment shall be maintained in accordance with the manufacturer's specifications.
2. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five minutes.
3. No individual piece of construction equipment shall operate longer than eight consecutive hours per day.
4. Electric equipment shall be used whenever possible in lieu of diesel or gasoline-powered equipment.
5. All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOx emissions.
6. On-road and off-road diesel equipment shall use diesel particulate filters (or the equivalent) if permitted under manufacturer's guidelines.
7. Prohibit the use of heavy-equipment during first- or second-stage smog alerts and suspend all construction activities during second-stage smog alerts.
8. Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use to the extent feasible.
9. Require that trucks and vehicles in loading or unloading queues have their engines turned-off when not in use.
10. Off-road equipment engines over 50 horsepower shall be Tier 2 certified or higher (unless Tier 2 equipment has been determined to not be available).
11. Provide notification to trucks and vehicles in loading or unloading queues that their engines shall be turned-off when not in use for more than ten minutes.

MM 3.3-4b: On-site Idling Standards. During generation tie-line installation these measures should be required to ensure the reduction of public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles:

1. The driver shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location.
2. The driver shall not operate a diesel-fueled auxiliary power system to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5 minutes at any location when within 100 feet of a restricted area.

MM 3.3-5b: Dust Control. The project proponent shall continuously comply with the following measures to control fugitive dust emissions during generation tie-line installation activities:

1. Increase handling moisture content of graded soils from the typical of 15 percent to 20 percent during construction activities.
2. Reduce speed of road grading by motor graders and rollers from typical 7.1 miles per hour (mph) to 5 mph.
3. Prior to construction, onsite roads that will have the greatest extent of onsite travel shall be graveled.
4. Use a dust suppressant such as magnesium chloride, polymer, or similar, to the extent feasible, including on gravel roads.

MM 3.3-6b: Onsite Emissions Control. The project proponent shall continuously comply with the following measures during construction of generation tie-lines to control emissions from onsite dedicated equipment (equipment that would remain onsite each day):

1. All onsite off-road equipment and on-road vehicles for maintenance shall meet the recent CARB engine emission standards or alternatively fueled construction equipment, such as compressed natural gas, liquefied gas, or electric, as appropriate.
2. All equipment shall be turned off when not in use, where feasible. Engine idling of all equipment shall be minimized.
3. All equipment engines shall be maintained in good operating condition and in tune per manufacturer's specification.

MM 3.3-7b: Valley Fever. Prior to ground disturbance activities, the project proponent shall provide a "Valley Fever Training Information Packet" and conduct training sessions for all construction personnel. A copy of the handout and a schedule of education sessions shall be provided to the Kern County Planning and Natural Resources Department. All evidence of the training session(s) and handout(s) shall be submitted to the Kern County Planning and Natural Resources Department on a monthly basis. Multiple training sessions may be conducted if different work crews come to the site for different stages of construction; however, all construction personnel shall be provided training prior to beginning work. The evidence submitted to the Kern County Planning and Natural Resources Department regarding the "Valley Fever Training Handout" and Session(s) shall include the following:

1. A sign-in sheet (to include the printed employee names, signature, and date) for all employees who attended the training session.
2. Distribution of an information packet that includes educational information regarding the health effects of exposure to criteria pollutant emissions and Valley Fever; symptoms of exposure; and instruction for reporting cases of flu-like or respiratory illness symptoms to the Site Safety Officer. Those with persistent systems lasting more than 3 days shall be recommended to seek immediate medical advice.
3. Training on methods that may help prevent Valley Fever infection.
4. A demonstration to employees on how to use personal protective equipment, such as respiratory equipment (masks), to reduce exposure to pollutants and facilitate recognition of symptoms and earlier treatment of Valley Fever. Though use of the equipment is not mandatory during work, the equipment shall be readily available and shall be provided to

employees for use during work, if requested by an employee. Proof that the demonstration is included in the training shall be submitted to the Kern County Planning and Natural Resources Department. This proof can be via printed training materials/agenda, DVD, digital media files, or photographs.

MM 3.3-8b: Valley Fever Public Awareness Program. Prior to the issuance of grading permits, a onetime fee shall be paid to the Kern County Public Health Services Department, in the amount of $3,200, for Valley Fever public awareness programs.

3.3.6 Residual Impacts after Mitigation

Mitigation Measures MM 3.3-1a through MM 3.3-10a for the solar facility portion of the project site and Mitigation Measures MM3.3-1b through MM3.3-8b for the gen-tie facility would substantially reduce potential impacts associated with construction and operation of the Proposed Action. However, even with implementation of the mitigation measures, short-term construction emissions of PM_{10} could exceed the CEQA significance threshold resulting in a significant impact on the human environment. No other residual impacts are expected to occur as a result of construction, operation, and maintenance of the project or an alternative.

3.4 Airspace Management and Use

3.4.1 Affected Environment

This section of the EIS/EIR describes the affected environment for airspace management and use in the Proposed Action area, including the regulatory and environmental settings.

Airspace management is defined as the direction, control, and handling of flight operations in the "navigable airspace" that overlies the geopolitical borders of the United States and its territories. "Navigable airspace" is airspace above the minimum altitudes of flight prescribed by regulations under U.S. Code (USC) Title 49, Subtitle VII, Part A, and includes airspace needed to ensure safety in the take-off and landing of aircraft (49 USC Section 40102).

National airspace is defined as the space that lies above a nation and comes under its jurisdiction. Although it is generally viewed as being unlimited, airspace is a finite resource that can be defined vertically and horizontally, as well as temporally, when describing its use for aviation purposes. The Federal Aviation Administration (FAA) defines National Airspace System (NAS) as "...a common network of airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; and rules, regulations and procedures, technical information and manpower and material." The NAS is designed and managed to protect aircraft operations around most airports and along air traffic routes connecting these airports, as well as within special areas where activities such as military flight training are conducted.

The FAA has established Special Use Airspace (SUA) within the NAS to contain or segregate activities that would be hazardous to nonparticipating aircraft. Military Operating Areas are defined airspace areas established by the FAA to separate/segregate certain military aviation activities from Instrument Flight Rules traffic and to identify where these activities are conducted for commercial Visual Flight Rules traffic. A restricted area is airspace within which flight by nonparticipating aircraft, while not wholly prohibited, is subject to restriction during scheduled periods when hazardous activities are being performed (14 Code of Federal Regulations [CFR] Part 1.1). Restricted areas designated as "joint use" by the FAA permit Air Traffic Control (ATC) to route nonparticipating aircraft through this airspace when it is not in use or when appropriate separation can be provided. SUA, which is identified for military and other governmental activities, is charted and published by the National Aeronautical Charting Office in accordance with FAA Order JO7400.2L and other applicable regulations and orders. Management of this resource considers how airspace is designated, used, and administered to best accommodate the individual and common needs of military, commercial, and general aviation.

Edwards Air Force Base (AFB) supports aircraft testing activities, and the airspace over Edwards AFB is used primarily for test flights. Potential impacts to pilots as a result of project implementation include potential glare and obstruction hazards presented by project infrastructure.

3.4.1.1 Scoping Issues Addressed

No comments related to airspace management and use were received.

3.4.1.2 Regulatory Framework

Federal

The FAA is authorized by statute, Title 49 of the USC, Section 40103(a)(1), to ensure the safety of air navigation and the efficient use of navigable airspace by aircraft. Title 14 CFR Part 77, addresses hazards to air navigation and provides regulatory guidance for FAA's authority.

The U.S. Air Force (USAF) implements FAA and Department of Defense (DoD) policy and guidance regarding Special Use Airspace and Airspace for Special Use through various instructions, processes and organizations. The Air Force Flight Standards Agency, AF/A30, Headquarters Air Force (HAF) Encroachment Management Working Group, major command (MAJCOM) and Unit Airspace Managers are responsible for identifying and evaluating projects which may adversely affect operations associated with military airfields, ranges, and airspace.

State

The California Public Utility Code regulates land use to ensure the safety of aircraft operating in the vicinity of airports, including California Public Utility Code Section 21402, which states no use shall be made of the space above the land and waters of the State of California which would interfere with the right of flight, and California Public Utility Code Section 21403(c), which explains the right of flight in aircraft, including the right of safe access to public airports, which includes the right of flight within the zone of approach of any public airport without restriction or hazard.

Local

The Kern County Zoning Ordinance has regulations regarding maximum permitted heights, both within specific zone districts and in districts with the H (Airport Approach Height) Combining District. The purpose of the H Combining District is to minimize aviation hazards by regulating land uses, restricting the height of buildings and vegetation, and specifying design criteria necessary to promote aviation safety. Structure height is restricted to prevent aesthetic impacts and to provide privacy for neighboring properties. Height limits are also established for structures within the Joint Service Restricted R-2508 Complex (which is part of the SUA) that require written concurrence from the military authorities responsible for operations in the area.

The Kern County Airport Land Use Compatibility Plan (ALUCP) establishes procedures and criteria by which the County can address compatibility issues when making planning decisions concerning airports and military aviation operations. The proposed solar facility would be located on Edwards AFB, which is a military aviation installation identified in the ALUCP. In addition, the proposed solar facility would be located approximately 5 miles from the Mojave Air and Space Port and at the nearest point, the proposed gen-tie line route options would pass within approximately 1.5 miles of the Mojave Air and Space Port, which is also identified in the ALUCP. Section 4.9 of the ALUCP addresses the Mojave Air and Space Port, and land uses and procedures relative to its aviation and includes height restrictions, and other compatibility criteria. In addition, Section 4.17.3 of the ALUCP requires that the China Lake Naval Air Weapons Station and Edwards AFB be notified of development that falls within identified notification categories. Due to the

location of the site within the R-2508 Complex and proximity to the Edwards AFB, the project falls within the following notification categories established in Section 4.17.3 of the ALUCP:

- Any structure within 75 miles of the R-2508 Complex that is greater than 50 feet tall.
- Any environmental document or discretionary project within 25 miles of the military installation boundaries.
- Any project that would create environmental impacts (e.g. visibility, elevated obstructions) within 25 miles of the R-2508 Complex.
- Any project within 25 miles of the centerline of any route/corridor.

3.4.1.3 Environmental Setting

This section of the EIS/EIR provides a description of airspace that could be affected by the proposed project. This description of airspace and its use is based on information included in "Environmental Assessment for Routine and Recurring Unmanned Aerial Vehicle Flight Operations at Edwards Air Force Base, California" published in 2007 (USAF, 2007).

Regional Setting

Edwards AFB is located in the Antelope Valley area of eastern Kern County. Airspace in the Antelope Valley area of southern California is used for all types of commercial and military aviation activities, and is managed by Los Angeles Air Route Traffic Control Center (ARTCC) and High Desert Terminal Radar Approach Control (TRACON) facilities. The military uses the airspace in the study area to maintain overall training and readiness for all branches of the military.

Within the NAS over Antelope Valley is SUA R-2508. This Joint Service Restricted R-2508 Complex airspace provides the largest single area of SUA over land in the United States, covering a land area of 20,000 square miles, with 3,000 square miles in Kern County. The R-2508 Complex airspace, shown in **Figure 3.4-1**, Special Use Airspace over Antelope Valley and Edwards Air Force Base, comprises 140 miles north to south (Bishop to Edwards AFB), and 110 miles east to west (Nevada state line to Bakersfield). The R-2508 Complex encompasses large portions of Inyo, Kern, San Bernardino, and Tulare Counties in east-central California and extends into Nevada's Esmeralda County. There are 16 small airports or airfields and two military airfields (Edwards AFB and Naval Air Warfare Station, China Lake) within the R-2508 Complex. This airspace is scheduled, regulated, and controlled to provide safe aircraft test areas.

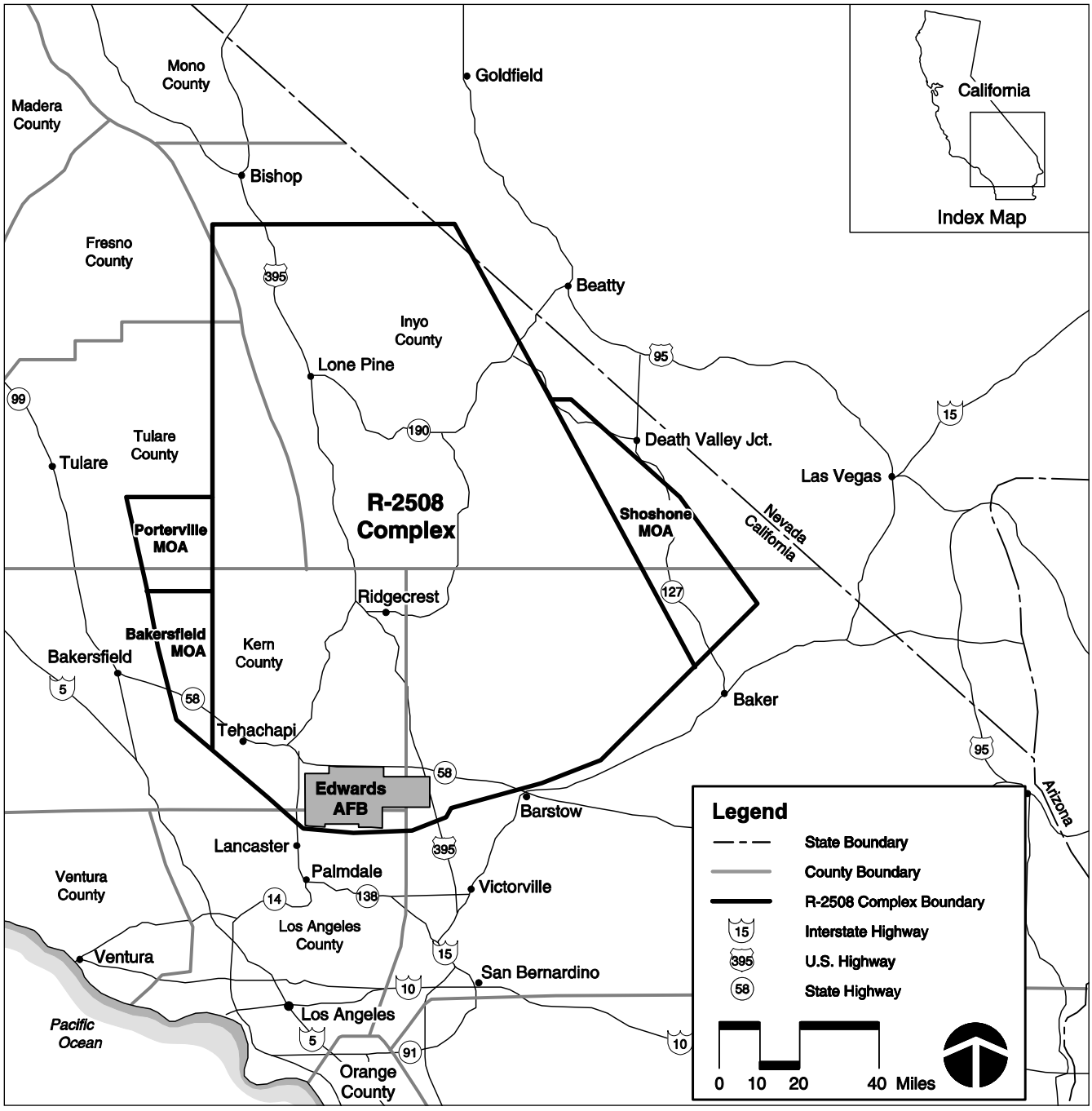


Figure 3.4-1: SPECIAL USE AIRSPACE OVER ANTELOPE VALLEY AND EDWARDS AFB

The R-2508 Complex has unique characteristics that allow the Air Force, Navy, Marine Corps, Army, National Aeronautics and Space Administration (NASA), and other governmental and commercial testing entities to conduct safe, large-scale testing activities for aircraft, spacecraft, and advanced weapon systems. It includes all the airspace and associated land presently used and managed by the three principal military entities conducting activities in the Upper Mojave Desert region: Air Force Flight Test Center, Edwards AFB; Army National Training Center, Fort Irwin; and Naval Air Warfare Center Weapons Division, China Lake. Within the R-2508 Complex there are seven Instrument Flight Rules and Visual Flight Rules low-altitude training routes and one slow-speed, low-altitude training route (SR 390). All routes are designated as "Military Assumes Responsibility for Separation of Aircraft (MARSA) operations," which are established by coordinating scheduling, meaning that the FAA is not responsible for ensuring separation between aircrafts in the airspace used by the military.

The R-2508 Complex lies exclusively within the Los Angeles ARTCC boundaries. The controlling agency for this SUA is High Desert TRACON. During the published hours of use, the using agency (e.g., Air Force, Navy, Marine Corps, Army) is responsible for controlling all military activity within the SUA and ensuring that its perimeters are not violated. When the airspace is scheduled to be inactive, the using agency releases it back to the controlling agency (High Desert TRACON) and, in effect, the airspace is no longer restricted.

Only one established commercial air traffic route transects the R-2508 Complex; however, that route is normally closed during daylight hours on Monday through Friday.

Local Setting

Military Airspace

The airspace immediately above Edwards AFB is designated as Restricted Area R-2515 in the southern portion of the R-2508 Complex. Restricted Areas are areas that denote the existence of unusual, often invisible hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. An aircraft may not enter a Restricted Area unless permission has been obtained from the controlling agency. Restricted Area R-2515 covers about 1,575 square miles of airspace that has been designated as restricted for use by the DoD, NASA, and other government agencies. The R-2515 Complex encompasses portions of Kern, San Bernardino, and Los Angeles Counties in east-central California. **Figure 3.4-2**, Restricted Airspace for Military Aviation over Edwards Air Force Base, shows the configuration of the setting of R-2515 Airspace within the R-2508 Complex in the NAS in the Antelope Valley Region. This airspace is scheduled, monitored, regulated, and controlled to provide safe aircraft test areas.

The average number of flights at Edwards AFB is approximately 24 per day. Flights include low level test and training flights along pre-established routes, flight tests within restricted areas and military training areas, and flights transitioning to other FAA-controlled airspace. Supersonic flights are routinely conducted, but occur only over approved areas.

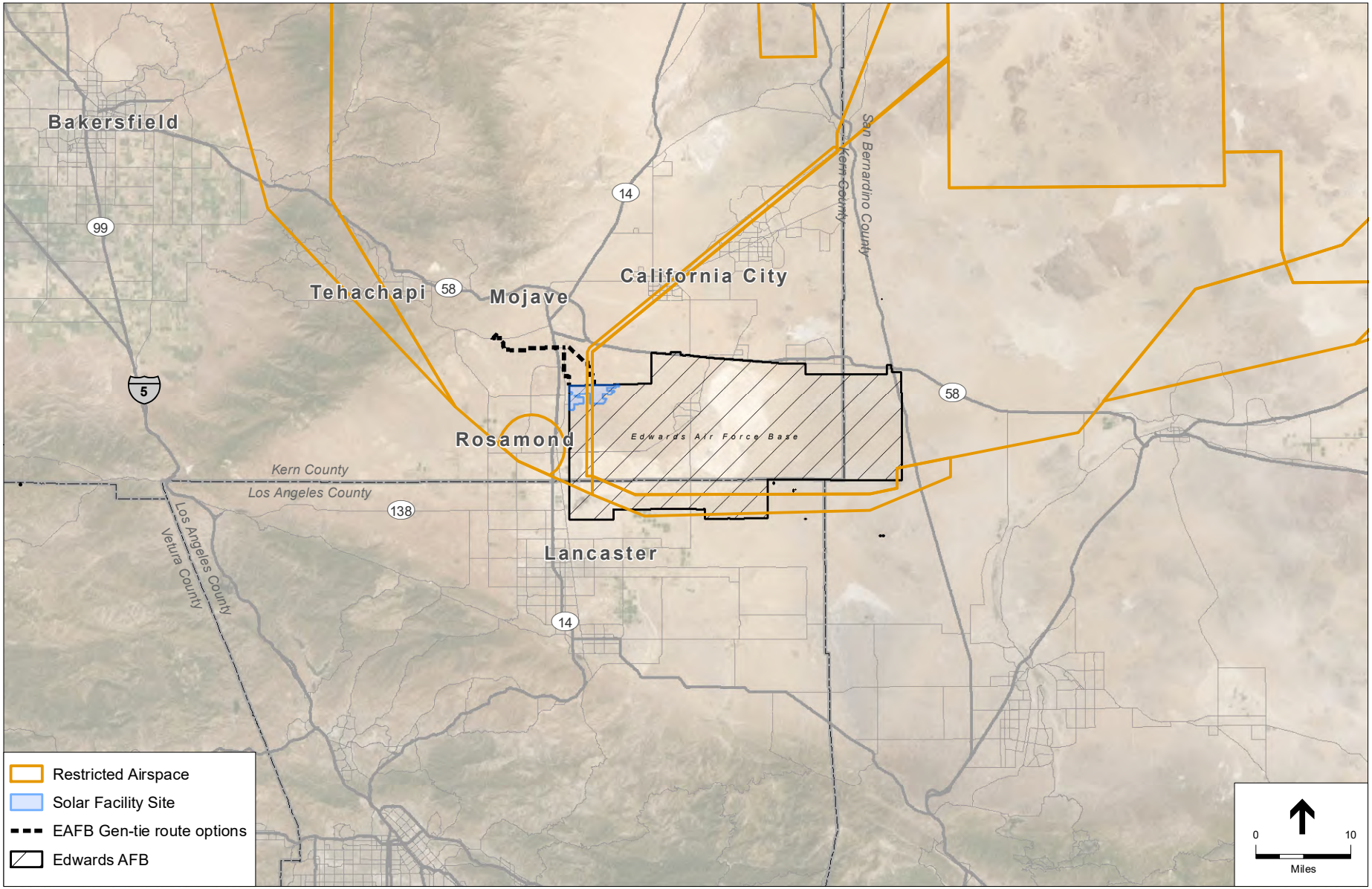


Figure 3.4-2: RESTRICTED AIRSPACE FOR MILITARY AVIATION OVER EDWARDS AFB

Other Airports

The proposed gen-tie route options would be within an area covered by the ALUCP of Kern County (see Section 3.4.1.2, *Regulatory Framework*, for more information).

The proposed solar facility and gen-tie line would be located approximately 5 miles and 1.5 miles, respectively, from the Mojave Air and Space Port. The airport is operated by the East Kern Airport District and is a public use airport. The airport is situated on 2,998 acres of land and includes three paved runways that range in length from 3,946 feet to 12,503 feet. The Mojave Air and Space Port was certified as a spaceport by the FAA in June 2004 and is presently operated primarily as a civilian-use airport and spaceport. It serves as a Civilian Flight Test Center, is the location of the National Test Pilot School, and also serves as a base for modifications of major military jets and civilian aircraft. Current daily use is frequent with an average of 48 aircraft operations per day (Kern County, 2012). The closest private airstrip to the project site is the Pontius Airport, which is a small, private airstrip located about 2 miles west of the project site. The airport is situated on 40 acres and includes two dirt runways at 1,300 feet and 1,900 feet in length, respectively. The airport is presently used for small, private aircraft only (single-engine, general aviation).

3.4.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences relating to airspace management for the Project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.4.2.1 Assessment Methods/Methodology

This assessment of airspace use and management discusses how the Proposed Action and alternatives, including the no-action alternative, may affect the conduct of military test flights conducted within the Restricted R-2515 airspace over Edwards AFB. All information provided in this section on the assessment of the proposed project on the management and use of airspace over Edwards AFB is based on information provided in these two studies. This analysis includes an assessment of:

- General solar reflectivity studies and the probability of glint/glare occurrence and impact
- Airspace penetration
- Communication system interference
- FAA and Air Force solar project glint and glare assessment

3.4.2.2 General Solar Reflectivity Studies

Reflectivity refers to light that is reflected off any surface. The potential impacts of reflectivity are glint and glare. Glint is a momentary flash of bright light and glare is a continuous source of bright light, both of which can cause brief visual impairment (also known as afterimage or temporary flash blindness) (FAA, 2010) (FAA Order 7400.2L defines flash blindness as “Generally, a temporary visual interference effect that persists after the source of illumination has ceased”). The potential impact of glare can be measured using the magnitude of reflection (referred to as retinal irradiance) and the subtended angle of the reflection (derived from the size of the reflected area and its distance from the sensitive receptor).

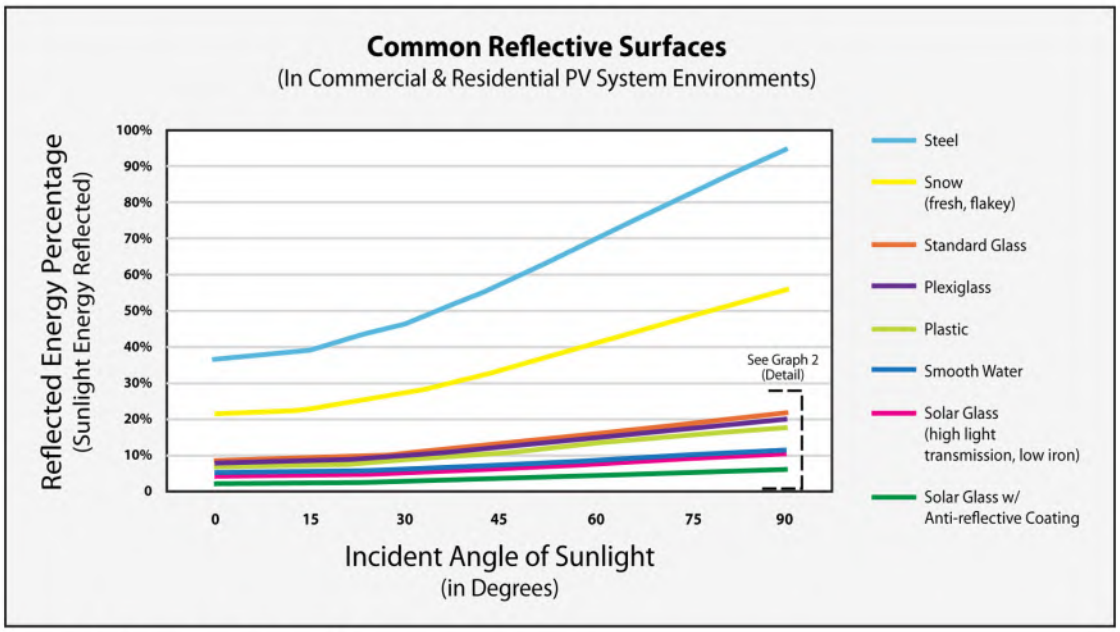
The reflectivity of a surface is influenced by two primary factors: the color of the surface and its physical composition. Color is important because some colors absorb light and its energy, whereas others reflect it. Light colors are most reflective (white being the most), and dark colors are least reflective. Also affecting the extent of reflection are the physical characteristics of the material's surface. Flat, smooth surfaces would reflect a more concentrated amount of sunlight back to the receiver, which is referred to as specular reflection. The more polished a surface is, the more it shines. Examples of surfaces that produce specular reflection include mirrors and still water. Rough or uneven surfaces would reflect light in a diffuse or scattered manner and therefore would not be received by the viewer as brightly. Diffuse reflection produces a less concentrated light and occurs from rough surfaces such as pavement, vegetation, and choppy water.

The amount of light reflected off of a solar panel surface depends on the amount of sunlight hitting the surface as well as the surface reflectivity. The amount of sunlight hitting the surface of the solar panel would vary based on geographic location, time of year, cloud cover, and solar panel orientation. The amount of sunlight reflected by the solar projects would also vary based on the type of solar power system and its materials and design. Photovoltaic (PV) solar panels use silicon to convert sunlight to electricity and silicon is naturally reflective. Solar PV employs glass panels that are designed to maximize absorption and minimize reflection to increase electricity production efficiency. To limit reflection, solar PV panels are constructed of dark light-absorbing materials and covered with an anti-reflective coating. This design results in the dark appearance of the solar panel. Recent generations of panels have included an anti-reflective material on the outer surface of the glass to further limit sunlight reflection. Current solar panels reflect as little as 2 percent of the incoming sunlight depending on the angle of the sun and assuming use of anti-reflective coatings (Ho et al., 2009).

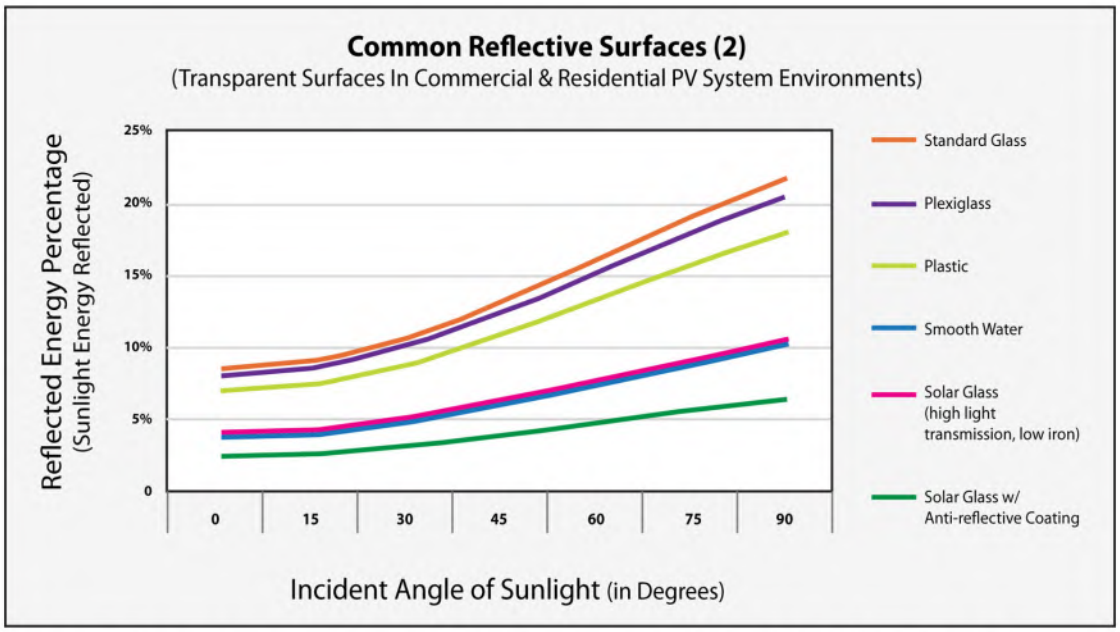
Solar modules use "high-transmission, low iron glass" which absorbs more light, producing small amounts of glare and reflectance compared to normal glass.

Figure 3.4-3, Spectral Surfaces and their Reflective Properties at Varying Incident Light Angles, shows the reflected energy of sunlight off some common residential and commercial surfaces. Solar glass sheets (the glass layer that covers the PV panels) are typically tempered glass that is treated with an anti-reflective or diffusion coating that further diffuses the intensity of glare produced. The figure shows that solar panels are about half as reflective as standard glass used in residential or commercial applications. Solar panels without an anti-reflective coating have approximately the same reflectivity as water; with an anti-reflective coating, the reflectivity is significantly less than that of water. Flat-plate panels reflect less sunlight than weathered, white concrete or snow (Black & Veatch, 2010). **Figure 3.4-4**, The Law of Reflection and its Application to Solar Panels, shows how the energy would be reflected.

The chart below shows the relative reflectivity of different surfaces: It shows that the reflectivity of PV modules is low and about the same as with water.

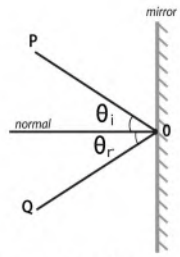


Graph 1: Common Spectral Surfaces

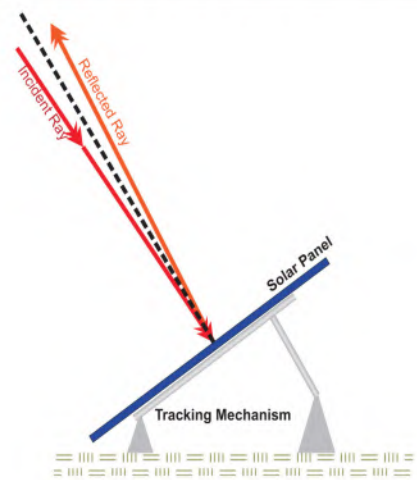


Graph 2: (Detail) Common Spectral Surfaces with Highly Spectral Surfaces Removed

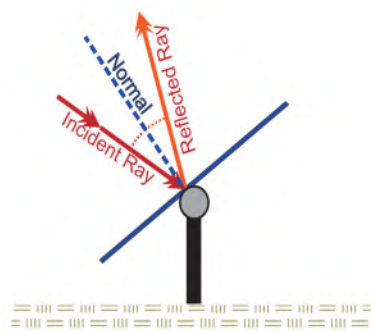
Figure 3.4-3: SPECTRAL SURFACES AND THEIR REFLECTIVE PROPERTIES AT VARYING INCIDENT LIGHT ANGLES



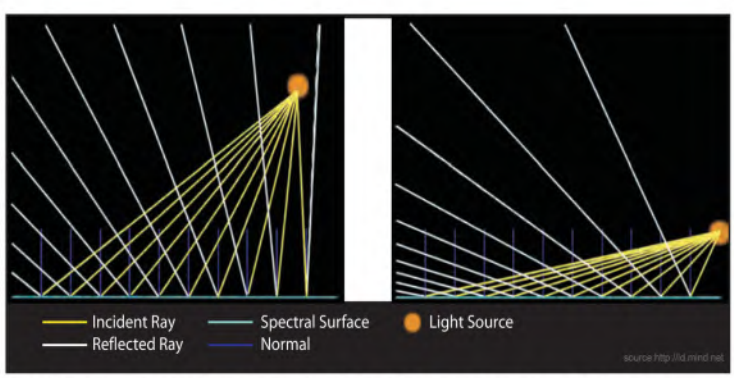
The Law of Reflection - which states that the direction of incoming light (the incident ray), and the direction of outgoing light reflected (the reflected ray) make the same angle with respect to the surface normal (perpendicular to the reflecting surface), thus the angle of incidence equals the angle of reflection; this is commonly stated as $\theta_i = \theta_r$.



Incident and reflected rays of light that would result from a optimally oriented solar panel on a variable tilt single axis tracking mechanism.



Incident and reflected rays of light that would result from the fixed tilt single axis tracker array.



This diagram illustrates how the angle of the reflected ray reacts to a light source moving to a lower horizontal azimuth. The conditions in the right illustration would increase the possibility of glare to a terrestrial-based viewer.

Figure 3.4-4: THE LAW OF REFLECTION AND ITS APPLICATION TO SOLAR PANELS

3.4.2.3 FAA Solar Projects

Solar panels have been installed on or near a number of small and large airports as part of a drive to utilize renewable energy for airport operations. More than 15 airports around the country are operating solar facilities, and airport interest in solar energy is growing rapidly (FAA, 2010). **Table 3.4-1**, Solar Projects On or Adjacent to Airports, presents a summary of solar projects on or adjacent to airports around the world (Spaven Consulting, 2011). Many of these projects are located in states with very high duration and intensity of sunlight, similar to conditions at Edwards AFB. There has been concern that reflection from solar panels may cause a momentary visual impairment to air traffic controllers or pilots and may therefore be hazardous to air navigation. Concerns about solar projects on airports are largely tied to the possibility of temporary blindness or eye damage to pilots in a critical phase of a flight. In response, the FAA published a report called "Technical Guidance for Evaluating Selected Solar Technologies on Airports" in 2010 to meet the regulatory and information needs of FAA personnel and airport sponsors in evaluating airport solar projects. The guidance includes case studies of operating solar projects at Denver International, Fresno Yosemite International, Metropolitan Oakland International, Meadows Field (Bakersfield), and Albuquerque International Sunport.

Solar installations are presently operating at San Francisco, Munich, Zurich, Singapore, Boston, and Stuttgart airports. Project managers from these six airports, where solar panels have been operational for 1 to 3 years, were asked about glare complaints. Air traffic controllers at three of those airports were also asked to comment on the effect of glare on their daily operations (FAA, 2010; Spaven Consulting, 2011). As of 2010, the FAA had not received any reports or serious complaints from pilots or air traffic controllers due to glare from existing solar PV installations at any of the six airports (FAA, 2010). The anecdotal evidence suggests that either significant glare is not occurring during times of operation or if glare is occurring, it is not a negative effect and a minor part of the landscape to which pilots and tower personnel are exposed. (FAA, 2010)

Two other notable solar projects on airport property include the installations at Meadows Field (BFL) in Bakersfield, California, which hosts an 800 kW solar facility, located approximately 250 feet from the runway taxiway, and Fresno Yosemite International Airport (FAT) in Fresno, California, where there is a 2-megawatt (MW) facility in the Runway Protection Zone near the end of a runway. The Meadows Field solar project has been in operation since January 2009. The solar project at Fresno has been operational since June 2008. In both cases, the air traffic controllers stated that glare has not affected their operations and they had not received complaints from pilots about glare being a problem. Oakland International's General Aviation Airport is host to a 756 kW ground-mounted system owned and operated by a private company. The project consists of 4,000 fixed solar panels and has been operational since November 2007 and there have been no reports of airspace impacts from radar or glare from the ATC tower or pilots.

Solar projects have been under construction or planned at a number of airports in the United States, such as Indianapolis, Indiana; Phoenix, Arizona; Rochester, New York; Rockford, Illinois; and many airports all over the world. FAA's approval of these construction plans (through issuance of "Determination of No Hazard" [see Table 3.4-1]) indicates that the FAA does not consider a large number of solar panels at or in the vicinity of the airport as hazardous to air navigation.

TABLE 3.4-1
SOLAR PROJECTS ON OR ADJACENT TO AIRPORTS

Site/Airport	City/State	Type of Facility	Aviation Facility	Reported Impacts
Kramer Junction	Victorville, CA	Concentrating Solar	Kramer Crop Dusting Strip, Edwards AFB	None Reported In 20 Years of Operation
Blythe	Blythe, CA	Parabolic Trough Concentrating Solar (1,000 MW)	Blythe Airport	No Information
Pena Boulevard	Denver, CO	Tracking PV Arrays	Denver International Airport	FAA Finding of No Hazard
Denver International Airport	Denver, CO	Fixed PV Arrays	Commercial Airport	FAA Finding of No Hazard
San Francisco Airport	Burlingame, CA	Roof-mounted PV Panels	Commercial Airport	FAA Finding of No Hazard
Fresno Airport	Fresno, CA	PV Arrays	Commercial Airport	FAA Finding of No Hazard
Bakersfield Airport	Bakersfield, CA	PV Arrays	General Aviation Airport	FAA Finding of No Hazard
Oakland Airport	Oakland, CA	Fixed PV Arrays	Commercial Airport	FAA Finding of No Hazard
Albuquerque Airport	Albuquerque, NM	Roof-mounted PV Panels	Commercial Airport	No Information
Boston Logan Airport	Boston, MA	Roof-mounted PV Panels	Commercial Airport	No Information
San Jose Airport	San Jose, CA	Roof-mounted PV Panels	Commercial Airport	No Information
Houston Airport	Houston, TX	Roof-mounted PV Panels	Commercial Airport	No Information
Ben Gurion Airport	Tel Aviv, Israel	Roof-mounted PV Panels	Commercial Airport	No Information
Adelaide Airport	Adelaide, Australia	PV Panels on Terminal Buildings	Commercial Airport	No Information
Munich Airport	Munich, Germany	Roof-mounted PV Panels	Commercial Airport	No Information
Prescott Airport	Phoenix, AZ	Fixed & Tracking PV Arrays	General Aviation Airport	No Information
Yuma Airport	Yuma, AZ	Roof-mounted PV Panels	Commercial Airport	No Information

SOURCE: Spaven Consulting (2011)

3.4.2.4 Air Force Solar Projects

The Air Force conducted flights over an existing solar energy facility (the solar energy generating station power plant in the Mojave Desert at Harper Lake – a solar thermal facility with reflecting mirrors, not PV designed to absorb light) to determine if the facility produced visual distractions for pilots. It was documented that no significant visual distractions were observed during the over flights (Harron, 2010).

A 14 MW solar power plant has been operating at Nellis AFB in Clark County, Nevada, since 2007. Occupying 140 acres of land at the western edge of the base, this ground-mounted PV system employs an advanced sun-tracking system. Tilted toward the south, each set of solar panels rotates around a central bar to track the sun from east to west. The 14 MW systems generate more than 30 million kilowatt-hours of electricity each year (about 82,000 kilowatt-hours per day).

There are three 1 MW solar power facilities operating at three different locations at Edwards AFB. Although the scale of the proposed project is vast compared to these facilities, this analysis considers experience of pilots in test flights over Edwards AFB and other AFBs where solar projects have been installed.

The Office of the Under Secretary of Defense (OSD) has directed that solar renewable energy projects using the authority found in 10 USC Section 2667 (Enhanced Use Leases such as the project) must document the potential for glint/glare from the project through the use of the Solar Glare Hazard Analysis Tool (SGHAT) prior to obtaining OSD energy certification. SGHAT was developed by Sandia National Laboratories in collaboration with the FAA to provide a quantified assessment of when and where glare would occur, as well as information about potential ocular impacts. SGHAT uses a Google Maps interface with site specific parameters such as flight path proximity to the project, glide slope, tracking versus fixed array, and solar panel orientation and tilt to simulate the probability of glint/glare occurrence during a specific time of day. Results of the SGHAT analysis for the project are shown on **Figure 3.4-5**, OVSP SGHAT Analysis, and indicate a low potential for temporary after-image or glint/glare during the spring and fall months and between 1500 (3:00 p.m.) and 1600 hours (4:00 p.m.) (OSD, 2014).

Pilots are directed to report perceived or actual flight risks to the installation safety officer and subsequently to the Air Force Flight Safety Center in accordance with AFIs 91-202, *The US Air Force MISHAP Prevention Program* and 91-204, *Safety Investigation Reports*. The Air Force Safety Center has no documented glint/glare reports from any active duty, guard, or reserve flight operations. This includes flight operations on FAA-controlled airports with active solar facilities illustrated in Table 3.4-1.

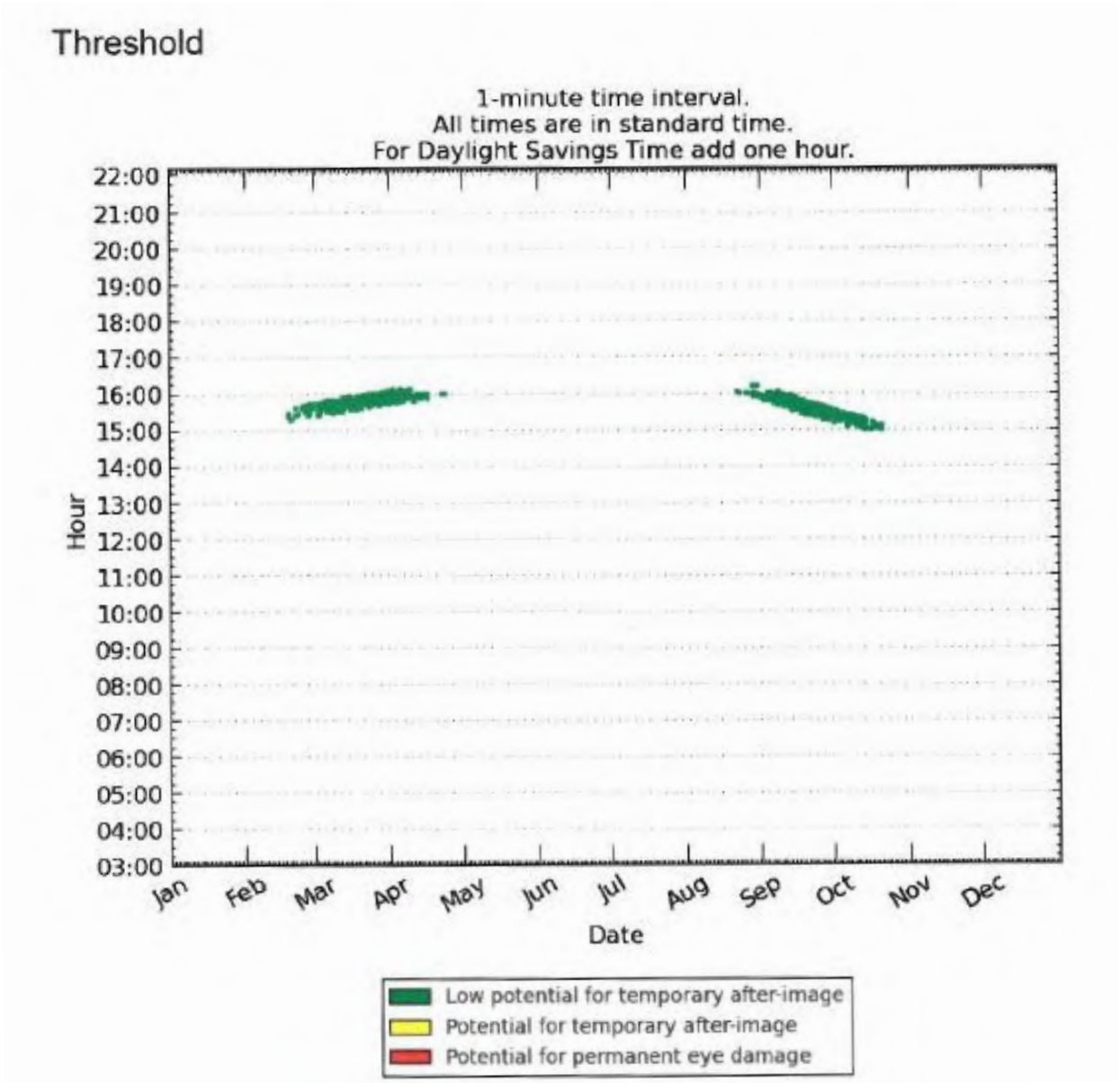


Figure 3.4-5: SGHAT ANALYSIS

3.4.2.5 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant related to airspace management and use if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CRR 15000 et seq.), and standards of professional practice.

A project could have a significant adverse effect on airspace management and use if it would:

- Affect the current use or mission-oriented use of airspace because of glint and glare from project-related solar panels;
- Be located within the adopted Kern County Airport Land Use Compatibility Plan and would result in a safety hazard for people residing or working in the project area;
- Be located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the project area; or
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

3.4.3 Analysis of Environmental Effects

3.4.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

The assessment of impact of the Proposed Action on the use and management of airspace in the area is based on analysis of all available information using the three different assessment methods described in Section 3.4.4.

Air Space Penetration

The tallest structures proposed for this project are the gen-tie line poles, which may be up to 215 feet in height. The FAA regulates structures taller than 200 feet according to FAA Regulations 14 CFR Part 77.13. The gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. The proposed gen-tie poles would exceed the 100-foot height limit for structures in Zone E1. The ALUCP policy indicates that gen-tie lines that exceed 100 feet in height may be consistent with the ALUCP following review on a case-by-case basis. Though adverse effects are not anticipated to occur, coordination of proposed gen-tie pole heights and notification as required by implementation of Mitigation Measure MM 3.4-1b would ensure adverse effects would not occur.

Communication System Interference

Communication systems interference includes negative impacts on radar, navigational aids (NAVAIDS), and infrared instruments. Radar interference occurs when objects are placed too close to a radar antenna and reflect or block the transmission of signals between the radar antenna and the receiver (either a plane or a remote location). Although it is possible for interference to be caused by other communication signals, more commonly it is caused by a physical structure placed between the transmitter and the receiver. NAVAIDS can be impacted similarly as radar, but they include passive systems with no transmitting signals.

Studies conducted during proposed project siting identified the locations of radar transmission and receiving facilities and other NAVAIDS on Edwards AFB. These studies determined locations that would not be suitable for proposed structures based on their potential to either block, reflect, or disrupt radar signals (Air Force Real Property Agency, 2007). The proposed project is within 1.5 miles of Pontius Airport (a private airstrip), approximately 5.3 miles from the Mojave Air and Space Port, and 9 miles from the Edwards AFB airport facilities. Due to the nature of their low profiles, solar PV systems typically represent little risk of interfering with radar transmissions since there are no radar facilities nearby. There are no communication facilities operating in the area being considered for the Proposed Action. Though adverse effects are not anticipated to occur, coordination of frequency and notification would ensure impacts would not occur with implementation of Mitigation Measure MM 3.4-1a.

FAA Airport Glint and Glare Assessment

As previously noted in Section 3.4.4, solar panels have been installed at several airports and reviews by the FAA indicate that these facilities have not affected the performance of pilots in landing and takeoff (FAA, 2010; Spaven Consulting, 2011).

Table 3.4-1 presents a summary of solar projects on or adjacent to airports around the world (Spaven Consulting, 2011). Many of these projects are located in states with very high duration and intensity of sunlight, similar to conditions at Edwards AFB.

PV cells using technologies similar to those proposed on the site routinely operate near glare-sensitive locations such as airports. However, glare resulting from the placement of these panels has not been a concern for pilots or other airport users (FAA, 2010).

It is reasonable to infer that solar panels at the project site would not impact pilot performance at Edwards AFB and would not require any changes in the existing use of airspace over Edwards AFB and that there would likely be no impact on management of airspace over Edwards AFB as Restricted Area R-2515.

Air Force Glint and Glare Assessment

The Air Force conducted numerous tests to determine if reflections from the solar PV panels on Nellis AFB would affect pilot performance. After several such tests, the Air Force concluded that glare and glint from solar panels did not affect the performance of pilots in their training missions. It was concluded that in the worst possible case, there was a slight potential for an “after image or flash glare” which was similar to the risk from reflections from water and less than that from snow or white concrete. An Environmental Assessment for the construction and operation of the solar farm at Nellis AFB (USAF, 2011) concluded that “reflectivity from solar panels would be no greater than weathered white concrete and would not increase glare on aviators approaching or departing the airfield.” The Finding of No Significant Impact (FONSI) indicated that no adverse effects relating to safety would occur. The use of airspace over Nellis AFB was not impacted by operation of the 14 MW solar facility (USAF, 2011).

The experience of Air Force pilots conducting operations over a solar power generation project at Nellis AFB suggests that there would be little, if any, impact on the use of airspace over Edwards AFB as a result of the Proposed Action.

Potential Impacts at Edwards AFB

To date, the Air Force has not received any complaints from its pilots about the three 1 MW solar power facilities operating at Edwards AFB. As discussed in Section 3.4.4, results of the SGHAT analysis for the Proposed Action indicate a low potential for temporary after-image or glint/glare during the spring and fall months and between 1500 and 1600 hours. Pilots are directed to report perceived or actual flight risks to the installation safety officer and subsequently to the Air Force Flight Safety. The Air Force Safety Center has no documented glint/glare reports from any active duty, guard, or reserve flight operations.

CEQA: Impact Significance Determination

Impact 3.4-1: The project would be located within the adopted Kern County Airport Land Use Compatibility Plan, result in a safety hazard for people residing or working in the project area.

The proposed solar facility would be located approximately 5 miles from the Mojave Air and Space Port and 7 miles from the Edwards AFB airport facilities. The proposed solar facility would be located outside of the Mojave Air and Space Port Influence Zone. At the nearest point, the proposed route options for the gen-tie line would pass within approximately 1.5 miles of the Mojave Air and Space Port. Depending on the final route, the gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. Section 4.9.5 of the ALUCP defines policies associated with the Mojave Air and Space Port, including requirements regarding the height of proposed structures as well as certain land use characteristics, such as glare. As described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, poles associated with the gen-tie line may be up to 215 feet tall, which would exceed the 100-foot height limit for structures in Zone E1. However, as previously discussed, ALUCP policy can provide an exemption to these height requirements for gen-tie lines. Therefore, with implementation of Mitigation Measure MM 3.4-1b, the gen-tie line would not be inconsistent with the ALUCP and is not expected to result in a safety hazard.

Section 1.7.1 of the ALUCP requires that, prior to approval of any type of land use development, findings shall be made that such development is compatible with training and operational missions of relevant military operations. Section 4.17.3 of the ALUCP requires notification of construction of the project to China Lake Naval Air Weapons Station and Edwards AFB. The Air Force, as lead agency for the NEPA action, is aware of the proposed project and its relation to military operations on Edwards AFB and China Lake Naval Air Weapons Station; therefore, the proposed project would be consistent with the military notification requirements of the ALUCP and multi-agency/service Notice to Airmen (NOTAM) program.

Furthermore, the proposed project would not result in an increase in air traffic levels or a change in location of air traffic patterns that would result in a substantial safety risk, as air traffic patterns would not be affected (the only mode of transport affected by the proposed project is

automobile/truck operations). In addition, as previously discussed, the proposed solar panels would be composed of anti-reflective material; therefore, glare resulting from the panels is not expected to be a concern for pilots. For the reasons described above the proposed project would not result in safety or operational hazards to aircraft that would represent a safety hazard to people residing or working in the area. In addition, the nature of operation of the solar facilities is not known to result in any operational issues or safety hazards to aircraft that would be a safety hazard to people. Implementation of Mitigation Measures MM 3.4-1a and MM 3.4-2a for the solar facility portion of the project, as well as Mitigation Measure MM 3.4-1b for the gen-tie portion of the project, would ensure the proposed project would be consistent with the ALUCP and General Plan policies of Kern County by requiring the developer to coordinate with DoD and obtain approval from FAA and the public airports and military installations in the area. Impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.4-1a, MM 3.4-2a, and MM 3.4-1b (see Section 3.4.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.4-2: The project would be located within the vicinity of a private airstrip and could result in a safety hazard for people residing or working in the project area.

The solar facility would be located within 2 miles of Pontius Airport, a private airstrip. However, as described in Section 3.10, *Infrastructure*, of this EIS/EIR, the operation of solar facility would not be expected to result in any operational issues or safety hazards related to airport operations. Therefore, the proposed solar facility would not result in safety hazards for people residing or working in the project area with respect to the project's proximity to a private airstrip. The solar facility would comply with all applicable safety standards and guidelines for airports and air fields; impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.4-3: The project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

As discussed in this section, existing utility-scale solar power plants in the project vicinity have not affected air traffic patterns associated with Edwards AFB or other surrounding airports. As described, the proposed project is not expected to result in physical obstruction to air traffic and glare from sunlight reflected from the proposed project PV panels is not expected to result in impacts to pilots. In addition, the proposed project would not result in an increase in air traffic levels that would result in a substantial safety risk, as air traffic levels would not be affected (i.e., the

only mode of transport affected by the proposed project is automobile/truck operations). Therefore, impacts related to a change in air traffic patterns and air traffic levels would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

3.4.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Air Space Penetration

Like Alternative A, the gen-tie line poles would be the tallest structures constructed under Alternative B, which may be up to 180 feet in height. In addition, the Alternative B gen-tie route options are in the same location as proposed under Alternative A. Therefore, Alternative B impacts concerning air space penetration would be the same identified for Alternative A. Specifically, the gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. Zone E1 has the lowest height limit, which is 100 feet. The Alternative B gen-tie poles would exceed the 100-foot height limit for structures in Zone E1. However, as previously discussed, ALUCP policy can provide an exemption to these height requirements for gen-tie lines. Therefore, with implementation of Mitigation Measure MM 3.4-1b, the gen-tie line would not be inconsistent with the ALUCP and is not expected to result in a safety hazard.

Communication System Interference

Because the Alternative B solar facility would be located within the same solar facility boundary as Alternative A, impacts involving communication system interference would be the same as identified for Alternative A. The Alternative B solar facility and gen-tie line are not located in areas that have the potential to either block, reflect, or disrupt radar signals (Air Force Real Property Agency, 2007). Due to the nature of their low profiles, solar PV systems typically represent little risk of interfering with radar transmissions when there are no radar facilities nearby. There are no communication facilities operating in the area being considered for Alternative B. Though impacts are not anticipated to occur, coordination of frequency and notification would ensure impacts would not occur for the solar facility portion of the project with implementation of Mitigation Measure MM 3.4-1a.

FAA Airport Glint and Glare Assessment

Alternative B would use the same PV solar technology as Alternative A, but would result in substantially fewer PV panels installed at the solar facility site. PV cells using technologies similar to those proposed under Alternatives A and B routinely operate near glare-sensitive locations such as airports. Glare resulting from the placement of these panels has not been a concern for pilots or other airport users (FAA, 2010). It is reasonable to infer that solar panels at the project site would not impact pilot performance at Edwards AFB and would not require any changes in the existing use of airspace over Edwards AFB. There would likely be no impact on management of airspace over Edwards AFB as Restricted Area R-2515.

Air Force Glint and Glare Assessment

Like Alternative A, Alternative B would use a PV solar technology to generate electricity. However, Alternative B would result considerably fewer solar panels installed at the solar facility site. As discussed under Alternative A, the Air Force concluded that glare and glint from solar panels did not affect the performance of pilots in their training missions. It was concluded that in the worst possible case, there was a slight potential for an "after image or flash glare" which was similar to the risk from reflections from water and less than that from snow or white concrete. There would likely be little to no impact on the use of airspace over Edwards AFB as a result of Alternative B.

Potential Impacts at Edwards AFB

Results of the SGHAT analysis for Alternative A are applicable to Alternative B because Alternative B consists of the same PV solar technology constructed within the same solar facility location. However, Alternative B would result in considerably fewer solar panels installed at the solar facility site. The SGHAT analysis indicated a low potential for temporary after-image or glint/glare during the spring and fall months and between 1500 and 1600 hours. Pilots are directed to report perceived or actual flight risks to the installation safety officer and subsequently to the Air Force Flight Safety. The Air Force Safety Center has no documented glint/glare reports from any active duty, guard, or reserve flight operations. Thus, it is likely that Alternative B would have little to no impact involving glint/glare.

CEQA: Impact Significance Determination

Like Alternative A, Alternative B would be required to implement Mitigation Measures MM 3.4-1a and MM 3.4-2a for the solar facility portion of the project, as well as Mitigation Measure MM 3.4-1b for the gen-tie portion of the project, to ensure the proposed project would be consistent with the ALUCP and General Plan policies of Kern County by requiring the developer to coordinate with DoD and obtain approval from FAA and the public airports and military installations in the area. Under Alternative B, the number of solar PV panels to be constructed would be less than the number of panels to be used in Alternative A. Because there would be fewer panels and thus a smaller area from which sunlight could be reflected, glare and glint from the solar panels would be reduced. However, considering that the solar panels are not expected to affect pilot performance or existing air traffic patterns or levels, impacts related to these topics are expected to be similar to Alternative A and would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.4-1a, MM 3.4-2a, and MM 3.4-1b (see Section 3.4.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.4.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. The management of airspace over Edwards AFB for testing purposes would continue at present, as described in Section 3.4.1.2. The No Action Alternative would not change the configuration or management of airspace. Therefore, implementing Alternative C would not affect airspace management and use over Edwards AFB.

CEQA: Impact Significance Determination

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions; therefore, Alternative C would result in no impacts related to consistency with the ALUCP and air safety hazards.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No impact.

3.4.4 Cumulative Impact Analysis

3.4.4.1 NEPA: Cumulative Environmental Effects and Their Significance

The geographic scope of the cumulative analysis with respect to airspace management and use would encompass all projects within the Joint Service Restricted R-2508 Complex and the Mojave Air and Space Port's influence area. The R-2508 Complex encompasses 20,000 square miles, with 3,000 square miles in Kern County. Thus, all past, present and reasonably foreseeable projects within this geographical area are within the project's cumulative scenario for airspace management and use. The projects located in Los Angeles County, as identified on Figure 3.4-1, are not within the R-2508 Complex and therefore outside of the geographic scope of the cumulative analysis.

The project, as well as the whole of Edwards AFB, is also located within the Restricted Area R-2515 Complex, which is a part of the larger R-2508 Complex. The Environmental Assessment for the proposed amendment to Restricted Area R-2515 Complex is complete and will be under contract soon. The amendment will allow for the consolidation of multiple flight training routes, the addition of a new route, and the introduction of new weapons systems such as the F-35 and multiple unmanned aerial systems. The amendment to the Restricted Area R-2515 Complex is a reasonably foreseeable project within the geographic scope of the cumulative analysis for the proposed action.

In addition to the Proposed Action's gen-tie line options, several other reasonably foreseeable projects would be located within the Mojave Air and Space Port's influence area. These projects include (see Table 3.4-1 and Figure 3.4-1 for location):

- RE Columbia

- RE Columbia 2
- RE Columbia 3
- High Desert Solar
- Mojave Solar Park by Cal West

Impacts of the Proposed Action could be cumulatively considerable if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects to result in a significant cumulative effect. However, as discussed above, the Proposed Action would not impact the existing use of airspace over Edwards AFB or within the R-2508 or R-2515 Complexes and would not create a safety hazard for the Mojave Air and Space Port, and therefore would not have the potential to combine with impacts from other projects to pose a hazard to air navigation. Furthermore, implementation of Mitigation Measures MM 3.4-1a and MM 3.4-2a for the solar facility portion of the project, as well as Mitigation Measure MM 3.4-1b for the gen-tie portion of the project, would require the developer to coordinate with DoD to avoid potential conflicts with military communications and obtain approval from FAA and the public airports and military installations in the area to ensure that the project would not adversely affect the mission of the existing airspace or military installations. Therefore, the Proposed Action would not result in adverse cumulative effects to airspace.

3.4.4.2 CEQA: Cumulative Impact Significance Determination

Cumulative impacts as they relate to CEQA would be less than significant with mitigation incorporated.

Mitigation Measures

Implement Mitigation Measures MM 3.4-1a, MM 3.4-2a, and MM 3.4-1b (see Section 3.4.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be less than significant.

3.4.5 Mitigation Measures

The potential electronic interference caused by control and transmission equipment for the facility can be mitigated through coordination with the appropriate Frequency Management Office.

3.4.5.1 Solar Facility Mitigation Measures

MM 3.4-1a: Frequency Management. Prior to the operation of the solar facility, the developer shall consult with the Air Force to identify the appropriate Frequency Management Office personnel to coordinate the use of telemetry to avoid potential frequency conflicts with military operations.

MM 3.4-2a: Federal Aviation Administration Notification. Prior to issuance of building permits:

1. The developer shall submit Form 7460-1 (Notification of Proposed Construction or Alteration) to the Federal Aviation Administration, in the form and manner prescribed in Code of Federal Regulation 77.17;
2. The developer shall also provide documentation to Air Force demonstrating that the Federal Aviation Administration has issued a "Determination of No Hazard to Air Navigation." This documentation shall include written concurrence from the military authority responsible for operations in the flight area depicted in the Kern County Zoning Ordinance Figure 19.08.160 that all project components in the flight area would create no significant military mission impacts.
3. The developer shall also provide documentation to Air Force demonstrating that a copy of the approved form(s) has been provided to the operators of Mojave Air Space and Port.

3.4.5.2 Gen-tie Mitigation Measures

MM 3.4-1b: Federal Aviation Administration Notification. Prior to issuance of grading or building permits for generation tie-line installation:

1. The developer shall submit Form 7460-1 (Notification of Proposed Construction or Alteration) to the Federal Aviation Administration, in the form and manner prescribed in Code of Federal Regulation 77.17 for the gen-tie towers;
2. The developer shall also provide documentation to the Kern County Planning and Natural Resources Department demonstrating that the Federal Aviation Administration has issued a "Determination of No Hazard to Air Navigation" For the gen-tie towers. This documentation shall include written concurrence from the military authority responsible for operations in the flight area depicted in the Kern County Zoning Ordinance Figure 19.08.160 that all project components in the flight area would create no significant military mission impacts.
3. The developer shall also provide documentation to the Kern County Planning and Natural Resources Department demonstrating that a copy of the approved form(s) has been provided to the operators of Mojave Air Space and Port.
4. The developer shall also provide documentation to the Kern County planning and Natural Resources Department demonstrating that project components would create no significant impact to aircraft operations at Mojave Air & Space Port (MHV).

3.4.6 Residual Impacts after Mitigation

There would be no impact on airspace use over Edwards AFB and, therefore, there would be no potential for residual impacts to occur after mitigation.

3.5 Biological Resources

3.5.1 Affected Environment

This section of the EIS/EIR describes the affected environment for biological resources in the proposed project area, including the regulatory and environmental settings.

The analysis presented in this section of the EIS/EIR is based on a review of relevant literature, field reconnaissance surveys, and focused biological surveys. The literature review included information available in peer-reviewed journals, standard reference materials, and relevant databases on sensitive resource occurrences including the California Natural Diversity Database (CNDDB) and California Native Plant Society's (the CNPS) Online Inventory of Rare and Endangered Plants, (CDFW, 2013a; CDFW, 2017; CDFW, 2018a; CNPS, 2013; CNPS, 2017; CNPS, 2018), as well as the 2015 Integrated Natural Resources Management Plan (INRMP), Edwards Air Force Base (AFB), California (EAFB, 2017) and other recent reports from projects within the region, including the project-specific reports by ECORP (2013; Appendix B4), Dudek (2018a; Appendix B4, 2018b; Appendix B18), and Brylski (2018a, 2018b; Appendix B21). Other sources of information reviewed included aerial photographs, topographic maps, soil survey maps, climatic data and project plans.

Project specific vegetation community mapping is described in Appendix B4 (Dudek 2018a; ECORP 2013). Project specific surveys including protocol desert tortoise and burrowing owl surveys conducted within Enhanced Use Lease (EUL) Study Area are described in Appendix B4 (ECORP, 2013). Project specific surveys including protocol special-status plants, desert tortoise and Swainson's hawk surveys conducted within the Gen-Tie Study Area are described in Appendix B4 (Dudek 2018a; Appendix B4). Additional information on Mohave ground squirrel survey efforts on Edwards AFB is described in Mohave Ground Squirrel Habitat Assessment Edwards Air Force Base Solar Project (Brylski, 2018a; Appendix B21). This analysis also relies on the findings of the Sunlight Partners Solar Array Project Approved Jurisdictional Determination (USACE 2013; Appendix B18) and jurisdictional delineations conducted by Dudek within 3,032 acres of the EUL Study Area in 2017 and 2018 (Dudek 2018b; Appendix B18).

3.5.1.1 Scoping Issues Addressed

The following scoping comments related to biological resources were provided during the scoping process by federal agencies (U.S. Environmental Protection Agency [USEPA] and U.S. Fish and Wildlife Service [USFWS]), the Lahontan Regional Water Quality Control Board (RWQCB), the California State Lands Commission, the California Department of Fish and Wildlife (CDFW), and organizations (Sierra Club, Center for Biological Diversity, Kern Audubon Society, Desert Tortoise Council, and National Public Lands News).

General Biological Resources (General Comments, Vegetation Resources, and Wildlife Resources)

General Comments

- Biological surveys should be conducted at appropriate times of the year.

- Preliminary biological assessments of the proposed project area and a 0.50-mile buffer should be conducted.
- Seasonal surveys should be performed for special-status plant species and sensitive vegetation communities.
- Rare resources have a high probability of occurring onsite and should be avoided where possible, and potential effects on them should be analyzed.
- Mitigation measures should be included for desert tortoise, Mohave ground squirrel, raptors, and vegetation and water impacts.
- CDFW, USFWS, Bureau of Land Management (BLM), and California Energy Commission (CEC) should be consulted in order to properly analyze potential impacts to biological resources, and appropriate mitigation measures should be provided.
- Detailed species and habitat biological impact statements and mitigation measures should be included, especially with regard to grebes, ravens, migratory birds, bats, desert tortoises, and other protected species as well as desert biodiversity and invasive species.
- New activities that will result in surface disturbance and construction of, or modification to, structures and facilities.
- The latest version of the CNDDB should be accessed to determine what rare plant and animal species may be impacted by the project.
- The relationship between the project and the latest Integrated Resources Management Plan should be clarified.
- An offsite alternative to address the residual habitat impacts of surface disturbance should be considered.
- The CDFW states that, if approved, the project would be subject to Fish and Game Code filing fees.
- Any special-status species or natural communities detected during the project surveys should be reported to the CNDDB.

Vegetation Resources

- Existing conditions in the project areas with natural vegetation should be included in the Affected Environment section and changes to current natural vegetation in the Environmental Effects section.
- Impacts associated with trimming perennial shrubs to 2 to 3 inches could likely cause mortality within the species populations and should be evaluated.
- Vegetation trimming associated with installation of solar panels could favor the spread of non-native species throughout the area.
- Habitat fragmentation of intact, ecologically functioning communities, especially with regard to enabling invasive species spread, should be considered.
- Native vegetation should be preserved as much as possible.

Wildlife Resources

- Transmission lines should be designed with bird friendly guidelines

- Poles should be designed to minimize the impact on wildlife that could result from increased predator perching surfaces, collision, and confusion.
- Collisions of migratory birds with solar panels and transmission lines, especially for the grebes, may occur. The Avian Power Line Interaction Committee should be referenced when designing aboveground electrical lines.
- A special-use permit from the USFWS should be obtained before any migratory bird carcasses are collected to prevent violation of the Migratory Bird Treaty Act of 1918 (MBTA).
- An avian and bat conservation strategy that involves adaptive management and monitoring should be developed for the project.
- The impacts of reduced habitat on migratory birds should be analyzed. Mitigation measures for the unavoidable loss of migratory bird habitat should be implemented, and may include contributing to a fund or being involved in a joint venture to prevent migratory bird mortality.
- The impacts of new lighting on birds and bats should be analyzed and appropriately mitigated.
- A monitoring plan should be developed to quantify the impact of solar facilities on bat populations, which often mistakenly perceive solar panels as water sources.

Special-Status Biological Resources (Special-Status Plants and Wildlife, Sensitive Habitats)

General Comments

- The relationship between the project and the Desert Renewable Energy Conservation Plan (DRECP) should emphasize that the DRECP is not relevant since the project does not include BLM-managed lands.

Special-Status Plants

- Rare plants should be avoided because of the lack of success in transplanting them.
- If avoidance is not feasible, then a Vegetation Salvage and Management Plan should be prepared.

Special-Status Wildlife

- Agassiz's desert tortoise populations, as well as populations of other special-status species should be included in the Affected Environment section.
- Populations of Agassiz's desert tortoise, Mohave ground squirrel, burrowing owl, and other rare plant and animal species of concern should be included in the Environmental Effects section.
- Anticipated change in use of the area by common ravens and other predators of desert tortoise should be included in the Environmental Effects section.
- A less densely populated desert tortoise location should be considered for project development.
- Any existing data demonstrating success of desert tortoise reintroduction should be discussed.

- The proposed project could result in an increase in common ravens that prey on desert tortoises. A specific management plan for common ravens in the project vicinity should be developed that focuses on minimization of raven subsidies.
- The project should contribute to the Regional Common Raven Management Program.
- The project should consider getting an incidental take permit for listed species such as desert tortoise, Mohave ground squirrel, and Swainson's hawk and/or mitigate for impacts to loss of habitat.
- Pre-construction surveys should be conducted for desert kit fox. If necessary, a passive relocation and excavation plan should be prepared. Perimeter fencing should be constructed to facilitate movement.
- The project should follow the requirements of the USFWS Standardized Recommendation for Protection of the Endangered San Joaquin Kit Fox Prior to and During Ground Disturbance (USFWS, 2011).
- Pre-construction surveys for burrowing owl should be conducted and, if necessary, a Burrowing Owl Exclusion Plan shall be developed. The project proponent should mitigate for the modification or removal of burrowing owl habitat.
- Pre-construction surveys should be conducted for golden eagle and the project proponent should mitigate for the modification or removal of golden eagle habitat.
- Project construction should occur outside of the bird breeding season, if feasible. If the project takes place during the bird breeding season, a pre-construction survey should occur and buffers and monitoring terms established.
- Towers should be of monopole design to reduce bird collisions.
- Hollow vertical structures should be capped after installation to prevent bird entrapment.
- To prevent desert kit fox and desert tortoise impacts, basins should be designed to prevent access by terrestrial wildlife.
- Active trenches, holes, and other excavations should be inspected and covered at the end of the day until the excavations are backfilled.
- Perimeter fencing should be installed so that the bottom of the fencing material is at least 10 inches from the ground surface.

Sensitive Habitats

- All direct impacts to sensitive habitats should be included.
- A Joshua tree mitigation measure needs to be tied into the analysis.
- "Islands" of Joshua trees resulting from the project may not be suitable in the long term.
- Joshua tree woodlands should be carefully accounted for to protect their diminishing habitat.
- Streambed alteration and/or discharge of fill material to a surface water may require a Section 401 permit or dredge and fill waste discharge requirements for impacts to non-federal waters—both issued by the Lahontan Water Board.
- A Streambed Alteration Agreement from CDFW may be required.
- A comprehensive jurisdictional delineation to identify all streams should be conducted.

- A hydrology study should be prepared.
- Blockages of crucial ecological process areas and/or habitat connectivity (on both larger and finer scales) should be evaluated. Edwards AFB should be evaluated to determine where important ecological processes and habitat connectivity areas occur.
- Habitat connectivity within Edwards AFB should be identified.
- Fencing for the project site must consider the movement of migratory species in the area.
- Effects on wildlife movement should be analyzed with regard to corridors, habitat suitability, and dispersal distances.

The following comments related to biological resources were received during the scoping period but are not addressed in this section of the EIS/EIR for the reasons cited below.

Vegetation Resources

- Vegetation/wetland habitat maps should be at a half-acre minimum mapping unit scale. Edwards AFB has conducted recent and extensive vegetation mapping in support of the INRMP, which was used for this document and is sufficient for the analysis, but was not conducted at the scale requested.

Special-Status Wildlife

- Longitudinal studies regarding the habitat of Swainson's hawk in the project area should be conducted. CDFW protocol surveys for the species were conducted and are adequate for this analysis.
- Desert Tortoise populations at Edwards AFB should be analyzed over-time to assess population trends

3.5.1.2 Regulatory Framework

Federal

Endangered Species Act of 1973 (USC, Title 16, Sections 1531 through 1543)

The Federal Endangered Species Act (ESA) of 1973 (16 U.S. Code [USC] Section 1531 et seq.) provides for the conservation of endangered and threatened species listed pursuant to Section 4 of the Act (16 USC Section 1533) and the ecosystems upon which they depend. Under the federal Endangered Species Act, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future.

The ESA also provides a program for the conservation and recovery of threatened and endangered species as well as the conservation of designated critical habitat that USFWS determines is required for the survival and recovery of these listed species.

Section 7 of the ESA requires federal agencies, in consultation with and assistance from the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The USFWS and National Marine Fisheries Service (NMFS) share responsibilities for administering the ESA. Regulations governing interagency cooperation under Section 7 are found

in Title 50 of the Code of Federal Regulation (CFR) Part 402. The Biological Opinion issued by USFWS or NMFS at the conclusion of formal consultation will include an Incidental Take Statement (ITS) exempting "take" (i.e., to harass, harm, pursue, hunt, wound, kill, etc.) that may occur incidental to an otherwise legal activity.

Section 9 lists those actions that are prohibited under the ESA. Although take of a listed species is prohibited, a take is exempt from the Section 9 prohibition when it is incidental to an otherwise legal activity and is in compliance with the terms of the ITS. Section 9 prohibits take of listed species of fish, wildlife, and plants without special exemption. The definition of "harm" includes significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns related to breeding, feeding, or shelter. "Harass" is defined as actions that create the likelihood of injury to listed species by disrupting normal behavioral patterns related to breeding, feeding, and shelter significantly.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit. Application procedures are found at 50 CFR Parts 13 and 17 for species under the jurisdiction of USFWS and 50 CFR Parts 217, 220, and 222 for species under the jurisdiction of NMFS.

Section 4(a)(3) and (b)(2) of the ESA requires the designation of critical habitat to the maximum extent possible and prudent based on the best available scientific and commercial data and after considering the economic impacts of any designations. Critical habitat is defined in section 3(5)(A) of the ESA: (1) areas within the geographic range of a species that are occupied by individuals of that species and contain the primary constituent elements (physical and biological features) essential to the conservation of the species, thus warranting special management consideration or protection; and (2) areas outside of the geographic range of a species at the time of listing but that are considered essential to the conservation of the species.

Bald and Golden Eagle Protection Act of 1940 (16 USC 668, enacted by 54 Stat. 250)

The Bald and Golden Eagle Protection Act of 1940 protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this act. Take of bald and golden eagles includes to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." (Title16 of the U.S. Code [USC] Section 668c). Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. (Federal Register [FR], volume 72, page 31132; 50 CFR 22.3).).

Migratory Bird Treaty Act (16 USC 703 through 711)

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, domestically implements a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union that provide for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory

bird, or any part, nest or egg of any such bird…" (16 USC Section 703). The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and personal property. The MBTA requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (February 1 to August 31, annually) to avoid nest abandonment and/or loss of eggs or young. A loss of habitat upon which the birds depend could constitute a violation of the MBTA. The MBTA also precludes take of migratory birds, including their parts, nest, or eggs without a permit.

Clean Water Act (33 USC 1251 through 1376)

The Clean Water Act (CWA) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator for a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain a Section 401 certification, thereby ensuring that the discharge will comply with provisions of the CWA. The RWQCBs administer the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the United States. Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. USACE implementing regulations are found at 33 CFR 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by EPA in conjunction with USACE (40 CFR Part 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

An approved jurisdictional determination was issued by USACE for the Sunlight Partners Solar Array Project on June 7, 2013 (USACE, 2013). USACE determined that potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. A full copy of the Sunlight Partners Solar Array Project Approved Jurisdictional Determination is provided in Appendix B18. The review area included the Antelope Valley Watershed excluding the areas of Lake Palmdale and all waters tributary to Lake Palmdale. This review area encompasses the proposed solar facility site and gen-tie route options. The proposed solar facility site and gen-tie route options are located in an area determined to not be under the jurisdiction of USACE and would, therefore, not require a Section 404 permit or 401 certification.

Wetlands and Other Waters of the United States

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies. USACE exerts jurisdiction over waters of the United States, including all waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the United States is generally defined as that portion that falls within the limits of the ordinary high-water mark.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by USACE as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by USACE (USACE, 1987).

Sikes Act (16 U.S.C. 670a-670o)

The Sikes Act, as amended by the Sikes Act Improvement Act of 1997 (16 USC 670a–670o), requires the Department of Defense to manage the natural resources of each military reservation within the United States and to provide sustained multiple uses of those resources. Air Force Instruction 32-7064, Integrated Natural Resources Management, provides guidance on how this requirement is implemented at Air Force installations.

State

State Lands Commission Significant Lands Inventory

Public Resources Code Section 6370 required the State Lands Commission in the 1970s to inventory its land holdings and to identify such lands that possess significant environmental values, including scenic, historic, natural, or aesthetic values of statewide interest. In compliance with this requirement, the State Lands Commission prepared a report entitled *Inventory of Unconveyed State School Lands and Tide and Submerged Lands Possessing Significant Environmental Values* (1975).

Pursuant to Title 2, Division 3, Chapter 1, Article 11, Section 2954 of the California Code of Regulations, projects that will affect Significant Lands are subject to review under CEQA. In order to provide permanent protection to environmentally significant values, projects must be designed to be consistent with the land use classifications assigned under the Significant Lands Inventory report, potentially through mitigation or alteration of the project.

California Endangered Species Act (California Fish and Game Code 2050 et seq.)

The California Endangered Species Act (CESA) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under the CESA. For projects that would affect a listed species under both the CESA and the ESA, compliance with the ESA would satisfy the CESA if CDFW determines that the federal incidental take authorization is "consistent" with the CESA under California Fish and Game Code Section 2080.1. For projects that would result in take of a species listed under the CESA only, the project operator would have to apply for a take permit under Section 2081(b).

California Fish and Game Code

Sections 1600 through 1616. Under these sections of the California Fish and Game Code, the project operator is required to notify CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Pursuant to the code, a

"stream" is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that supports or has supported riparian vegetation is a stream and is subject to CDFW jurisdiction. Altered or artificial watercourses valuable to fish and wildlife are subject to CDFW jurisdiction. CDFW also has jurisdiction over dry washes that carry water during storm events.

Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement, which becomes part of the plans, specifications, and bid documents for the project.

Sections 2080 and 2081. Section 2080 of the California Fish and Game Code states that "No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act." Pursuant to Sections 2080.1 or 2081 of the code, CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or Memoranda of Understanding if the take is incidental to an otherwise lawful activity, impacts of the authorized take are minimized and fully mitigated, the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and the project operator ensures adequate funding to implement the measures required by CDFW, which makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

Sections 3503, 3503.5, 3513, and 3800. Under these sections of the California Fish and Game Code, the project operator is not allowed to conduct activities that would result in the taking, possessing, or destroying of any birds of prey or their nests or eggs; the taking or possessing of any migratory nongame bird as designated in the MBTA; the taking, possessing, or needlessly destroying of the nest or eggs of any birds, except as otherwise provided by the Fish and Game Code or relevant regulations; or the taking of any nongame bird pursuant to California Fish and Game Code Section 3800.

CEQA Guidelines, Section 15380

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in ESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in CEQA primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not been listed by either USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a

species from the potential impacts of a project until the respective government agencies have an opportunity to designate the species as protected, if warranted. CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not at present have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected, and requires findings of significance if there would be substantial losses. Natural communities listed by CNDDB as sensitive are considered by CDFW to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents such as general plans often identify these resources as well.

California Endangered Species Act

The California Endangered Species Act (Fish and Game Code Section 2050 et seq.) requires CDFW to establish a list of endangered and threatened species (Section 2070) and to prohibit the incidental taking of any such listed species except as allowed by the Act (Sections 2080–2089). In addition, California ESA prohibits take of candidate species (under consideration for listing).

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

CDFW also enforces the protection of native non-game birds. Fish and Game Code Sections 3503 and 3503.5 mandate the protection of California-native non-game birds' nests, and Fish and Game Code Section 3800 makes it unlawful to take California-native non-game birds (CDFG, 2008).

Native Plant Protection Act (California Fish and Game Code Sections 1900 through 1913)

The Native Plant Protection Act (NPPA) includes measures to preserve, protect, and enhance rare and endangered native plants.

California's NPPA requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of listed plants from the wild and require notification of CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that would otherwise be destroyed. The project operator is required to conduct botanical inventories and consult with CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

California Desert Native Plants Act

The California Desert Native Plants Act (CDNPA) protects certain species of California desert native plants from unlawful harvesting on both public and privately owned lands. The CDNPA only applies within the boundaries of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. Within these counties, the CDNPA prohibits the harvest, transport, sale, or possession of specific native desert plants unless a person has a valid permit or wood receipt, and the required tags and seals. Plant species protected under the CDNPA include all species of the family Agavaceae (century plants, nolinas, yuccas), all species of the genus *Prosopis*

(mesquites), all species of the genus *Cercidium* (palos verdes), catclaw acacia (*Acacia greggii*), desert holly (*Atriplex hymenelytra*), and other California native desert plants as identified in Division 23 of the California Food and Agriculture Code.

The California Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; and/or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Section 401 of the Clean Water Act

Under Section 401 of the Clean Water Act, the RWQCB must certify that actions receiving authorization under Section 404 of the Clean Water Act also meet state water quality standards. The RWQCB also has jurisdiction over waters deemed "isolated" or not subject to Section 404 jurisdiction.

Porter-Cologne Water Quality Control Act - State Water Resources Control Board

The Porter-Cologne Act established the State Water Resources Control Board (SWRCB) and divided California into nine regions, each overseen by an RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the State's surface water and groundwater supplies and has delegated primary implementation authority to the nine RWQCBs. The Porter-Cologne Act assigns responsibility for implementing CWA Sections 401 through 402 and 303(d) to the SWRCB and the nine RWQCBs. Any person discharging waste or proposing to discharge waste within any region, other than a community sewer system, which could affect the quality of the waters of the State, must file a report of water discharge (SWRCB, 2017).

The SWRCB implementation authority for the Environmental and Sustainability Program (ESP) is the Lahontan RWQCB. The Water Quality Control Plan for the Lahontan Region (or Basin Plan) sets forth water quality standards for the surface waters and groundwaters of the region, including both designated beneficial uses of water and the narrative and numerical objectives that must be maintained or attained to protect those uses (LRWQCB, 2016).

The SWRCB requires compliance with the Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction (Order 2004-0004-DWQ) if dredging or fill discharges to waters of the State would be less than 0.2 acre, 400 linear feet, and 50 cubic yards. Compliance with Waste Discharge Requirements means that discharges from project sites cannot cause pollution, contamination or nuisances (SWRCB, 2004).

The SWRCB Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Wastewater Treatment Systems (Resolution No. 2012-0032) established a statewide, risk-based, tier approach for the regulation and management of onsite wastewater treatment systems (OWTS) and replacements and sets the level of performance and protection expected from OWTS in order to avoid water quality degradation and protect public health. The policy is divided into five tiers

and lists standards for existing and replacement OWTS, as well as corrective action requirements for failing or potentially failing systems (SWRCB, 2012).

Under the Porter-Cologne Water Quality Control Act, waters of the state fall under the jurisdiction of the appropriate RWQCB. Under the act, the RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards.

Local

Kern County General Plan

The Kern County General Plan identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation of biological resources that must be considered by Kern County during the decision-making process for any project that could affect biological resources. The policies and implementation measures in the Kern County General Plan for biological resources that are applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

The Land Use, Open Space, and Conservation Element of the Kern County General Plan states that the element provides for a variety of land uses for future economic growth while also ensuring the conservation of the County's agricultural, natural, and resource attributes. Section 1.10, General Provisions, provides goals, policies, and implementation measures that apply to all types of discretionary projects.

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

<u>Goal</u>

Goal 1: Ensure that the County can accommodate anticipated future growth and development while a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

<u>Policies</u>

Policy 27: Threatened or endangered plant and wildlife species should be protected in accordance with state and federal laws.

Policy 28: The County should work closely with state and federal agencies to assure that discretionary projects avoid or minimize impacts on fish, wildlife, and botanical resources.

Policy 29: The County will seek cooperative efforts with local, state, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.

Policy 30: The County will promote public awareness of endangered species laws to help educate property owners and the development community of local, state, and federal programs concerning endangered species conservation issues.

Policy 31: Under the provisions of CEQA, the County, as lead agency, will solicit comments from the CDFW and the USFWS when an environmental document (Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report) is prepared.

Policy 32: Riparian areas will be managed in accordance with the USACE and the CDFW rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.

Implementation Measures

Measure Q: Discretionary projects shall consider effects to biological resources as required by the CEQA.

Measure R: Consult and consider the comments from responsible and trustee wildlife agencies when reviewing a discretionary project subject to the CEQA.

Measure S: Pursue the development and implementation of conservation programs with state and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.

Kern County General Plan Chapter 5. Energy Element

Policies

Policy 8: The County should work closely with local, State, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.

Policy 9: The County should develop and implement measures which result in long-term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.

The Kern County General Plan Conservation and Open Space Element establishes policies related to the protection of threatened or endangered plant and wildlife species and cooperation with federal, State and local agencies. The Energy Element of the General Plan requires the County to work closely with local, state, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical. The Energy Element also discourages the development of energy projects on undisturbed land supporting state or federally protected plant and wildlife species. The County's General and Specific Plans encourage development within urbanized areas, encourage the preservation of Joshua trees and wildflower concentrations, and discourage the development and fragmentation of resource management areas.

The Mojave Specific Plan establishes objectives and policies related to biological resources, such as to promote the retention of natural setting and use of native or adaptable vegetation, to reduce the impact of development on important ecological and biological resources, and to encourage the preservation of Joshua trees, Joshua tree woodlands, wildflower displays or other biologically sensitive flora.

The South of Mojave-Elephant Butte Specific Plan states that the removal of native desert vegetation should be limited, stands of Joshua trees should be preserved, and utilities along roadways should be placed underground to protect scenic values. The plan also states that adheres to the guidelines identified in the plan will produce the least negative effect on wildlife, other than no development at all.

Kern County Grading Ordinance

The Kern County Grading Ordinance (County Municipal Code Chapter 17.28) requires a permit for all grading permit be obtained prior to commencement of construction activities. The Kern County Grading Guidelines specify the necessary actions to comply with the Kern County Grading Code for developers that require a grading permit for their grading activities.

3.5.2 Environmental Consequences

3.5.2.1 Environmental Setting

The regional and local settings have been divided into general resources including vegetation and wildlife communities, and special-status resources including special-status plants, special-status wildlife, and sensitive habitats. This section of the EIS/EIR is organized to first describe regional setting for these resources, followed by the local setting for the EUL Study Area (within which the solar facility would be located) and the local setting for the Gen-Tie Study Area (within which the project's proposed gen-tie route options are located).

In addition to general reference materials available, this chapter was prepared using information from the following project-specific reports and surveys referenced therein:

1. *Final Biological Technical Report for the Oro Verde Enhanced Use Lease and Gen-Tie Study Areas, Edwards Air Force Base* (ECORP, 2013)
2. *Final Biological Resources Technical Report for the Gen-Tie Routes for Edwards Air Force Base (AFB) Solar EUL Project* (Dudek, 2018a)
3. *Jurisdictional Delineation Report for Edwards Air Force Base Solar Project* (Dudek, 2018b)
4. *Mohave Ground Squirrel Habitat Assessment Edwards Air Force Base Solar Project* (Brylski, 2018a)
5. *Mohave Ground Squirrel Habitat Assessment for the Gen-Tie Routes for Edwards Air Force Base (AFB) Solar EUL Project* (Brylski, 2018b)

Because the EUL Study Area is located on Edwards AFB, the study area has been subject to numerous long-term baseline biological surveys in order to inform the management of the land consistent with the INRMP (EAFB, 2017). In Section 2.3.3 of the INRMP, the Air Force describes some of the surveys that have been conducted on the base and species-specific surveys are described in the various sections that relate to the species or taxonomic group. Specifically, Section 2.3.2 of the INRMP explains that on the base, terrestrial macro-arthropod surveys were conducted from 1996–1998 (Pratt, 2000). Miller and Payne (2000) evaluated aquatic habitats for macroinvertebrates from 1995 to 1996. Several different studies provided data on eubranchiopods (Branchiopod Research Group, 1993; Miller and Payne, 2000; Perez and Donn, 2009). Bird studies

were conducted between 2000–2005 (AMEC Earth and Environmental, 2006). Surveys were also completed on reptiles and amphibians (AMEC Earth and Environmental, 2008) and butterflies (Pratt, 2000; EAFB, 2017). Surveys were completed for mammals, as described by species in the INRMP (EAFB, 2017). Additionally, Mohave ground squirrel survey efforts on Edwards AFB span nearly 40 years from 1973 (Recht, 1977) to 2012 (Tetra Tech, 2012). Before 2003, Mohave ground squirrel surveys were carried out on individual sites to inform base projects and as part of applied Mohave ground squirrel ecological studies. In 2003, a standardized monitoring program for Mohave ground squirrel and other species was initiated with Habitat Quality Assessment (HQA) grids established across the base. There are currently 61 HQA stations where Mohave ground squirrel populations are monitored (Tetra Tech, 2010). Additional information on Mohave ground squirrel survey efforts on Edwards AFB are described in *Mohave Ground Squirrel Habitat Assessment Edwards Air Force Base Solar Project* (Brylski, 2018a) (Appendix B21).

Several project-specific biological studies were performed in 2012 and 2013 to determine the baseline biological conditions present at the EUL Study Area. Based on the outcome of coordination with Edwards AFB and the resource agencies (USFWS and CDFW), vegetation mapping, rare plant habitat mapping, focused modified-protocol desert tortoise surveys, and focused modified-protocol burrowing owl surveys were conducted within the EUL Study Area (ECORP, 2013). In addition to these surveys, a thorough literature search was conducted to identify previous biological studies that were conducted in and around the EUL Study Area. In addition to the INRMP (EAFB, 2008), a total of 24 reports were reviewed, 11 of which were studies completed in or partially within the EUL Study Area, and the results are summarized in the biological resources technical report for the EUL Study Area and incorporated in this EIS/EIR. These previous surveys, as cited in the ECORP (2013) biological resources technical report included: (1) a habitat assessment (AECOM, 2010); (2) preliminary site surveys, focused surveys for sensitive plants and desert tortoise, and Mohave ground squirrel trapping (ECORP, 2011); (3) a habitat quality analysis, which includes collecting data on small mammals, large mammals, avian, herpetofauna, and vegetation communities (ECORP, 2005); (4) focused surveys for special-status plants, dry and wet season Eubranchipod Surveys, desert tortoise surveys, and Mohave ground squirrel trapping (Tetra Tech, 1993); (5) focused surveys for alkali mariposa lily (Tetra Tech, 1995); (6) density estimates for desert tortoise (Tetra Tech, 1996); (7) density estimates for desert tortoise (Tetra Tech, 1996); (8) wildlife corridors and linkage studies (Science and Collaboration for Connected Wildlands and Northern Arizona University, 2012); (9) a jurisdictional streambeds review (URS Corporation, 2011); and (10) aquatic invertebrates survey (Tetra Tech, 2009).

As described in Section 3.5.2.1, *Federally and State Listed Species: Desert Tortoise*, in 2014, a Biological Opinion for the effects on the federally threatened desert tortoise for Edwards AFB was completed. The Biological Opinion describes the existing conditions of the base with respect to desert tortoise habitat and the status of the species (USFWS, 2014a).

A jurisdictional delineation was conducted within 3,032 acres of the EUL Study Area in 2017 and 2018 (Dudek, 2018b; Appendix B18). In the remainder of the EUL Study Area, to determine the potential for additional jurisdictional waters of the state to be present, a map based analysis was conducted. More specifically, the USFWS National Wetlands Inventory (NWI) (USFWS, 2017) and the U.S. Geological Survey (USGS) National Hydrographic Dataset (NHD) (USGS, 2018)

were reviewed to identify potentially occurring jurisdictional waters of the state. The USFWS NWI and the NHD data generally overlap in the EUL. Because in the EUL Study Area, the USFWS NWI data was more abundant than the NHD data and the USFWS NWI data is polygon data (allowing acreage quantification), the USFWS NWI data was used in this EIS/EIR for analysis purposes to identify and quantify potential jurisdictional waters of the state. This approach provides a conservative estimate to analyze potential impacts to waters of the state under the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA). Prior to ground-disturbing activities, a field-based jurisdictional delineation of waters of the state will be conducted to determine and refine the precise location of waters of the state.

Also, a habitat assessment for Mohave ground squirrel was conducted in 2017 and 2018 in the EUL Study Area. Additional trapping surveys on the project site were conducted in 2018 (Brylski, 2018a). The results of these trapping surveys were negative: Mohave ground squirrels were found to be absent.

Biological data has been collected for approximately 40 years on the base, and the project area has been managed consistent with the INRMP. Because the EUL Study Area has not been subject to significant disturbance, including base missions, the landscape, flora and fauna have remained relatively consistent over time. Additionally, the lands are managed consistent with the INRMP (EAFB, 2017), which requires that the native biological diversity of the ecosystem are maintained.

Regional Setting

This section of the EIS/EIR discusses both general and special-status biological resources in a regional setting that includes both the EUL and gen-tie study areas, as well the surrounding habitats in the region. More detailed discussions of these resources are presented in the sections titled *Local Setting – EUL Study Area* and *Local Setting – Gen-Tie Study Area.*

The biological study area within the EUL and gen-tie study area covers approximately 7,038 acres and is regionally located in northern Antelope Valley, in the western Mojave Desert in Kern County. The Antelope Valley is located in a high-desert environment with a semiarid climate and low humidity. The temperatures in the valley can be extreme. High temperatures peak in the summer months of June and July and can reach well over 100 degrees Fahrenheit (°F) with the coldest temperatures in the winter months reaching as low as 7°F. The regional setting is within the Antelope Valley Watershed located at southern end of the Sierra Nevada watershed. The average rainfall in the Antelope Valley region ranges from 5 to 10 inches.

General Biological Resources

Vegetation Communities

Vegetation in the project region is influenced by climate, topography, and soils, as well as past land use and includes Joshua tree woodlands, creosote scrub, saltbush scrub, and agricultural and disturbed lands with urban, commercial, and industrial uses. Common species in the region include native species such as Joshua trees (*Yucca brevifolia*) and California juniper (*Juniperus californicus*); native shrubs such as creosote (*Larrea tridentata*) and four-winged saltbush (*Atriplex canescens*); and non-native grasses such as cheatgrass (*Bromus tectorum*) and red brome (*Bromus madritensis* ssp. *rubens*).

Wildlife Resources

Because of the lack of a perennial water source and habitat types present, no fish or amphibian species are expected in the project region.

The western Mojave Desert supports a variety of common reptiles, birds, and mammals. Reptile species common to the region include western whiptail (*Aspidoscelis tigris*), side-blotched lizard (*Uta stansburiana*), zebra-tailed lizard (*Callisaurus draconoides*), gopher snake (*Pituophis catenifer*), coachwhip (*Masticophis flagellum*), Mojave rattlesnake (*Crotalus scutulatus*), and sidewinder (*Crotalus cerastes*). Bird species common to the region include mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), common raven (*Corvus corax*), and red-tailed hawk (*Buteo jamaicensis*). Mammal species common to the region include black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), desert woodrat (*Neotoma lepida*), and coyote (*Canis latrans*); bat species typical for the region include western small-footed myotis (*Myotis ciliolabrum*), California myotis (*Myotis californicus*), and western pipistrelle (*Pipistrellus hesperus*).

Special-Status Biological Resources

Special-status biological resources with potential to occur within the EUL are identified on a regional scale in this section of the EIS/EIR, while the potential for each of these resources to exist within the project study areas is discussed in the Local Setting sections. Information for this section of the EIS/EIR was compiled from a number of sources including recent searches of the CNDDB and the CNPS's Electronic Inventory within the occupied and surrounding 10 USGS 7.5-minute topographical quadrangles (i.e., a nine-quad search) for all project features, (CDFW, 2013a; CDFW, 2017; CDFW, 2018a; CNPS, 2013; CNPS, 2017; CNPS, 2018), as well as the *2015 Integrated Natural Resources Management Plan* (*INRMP), Edwards Air Force Base, California* (EAFB, 2017) and other recent reports from projects within the region, including the project-specific reports by ECORP (2013), Dudek (2018a, 2018b), and Brylski (2018a, 2018b).

Desktop analysis resulted in a total of 32 plant species and 29 wildlife species with records in the vicinity; however, 14 plant species and 8 wildlife species are associated with habitats that do not occur in the EUL and gen-tie study areas, or are outside the range of the species, including *Opuntia basilaris* var. *treleasei* (Bakersfield cactus); thus, the species are not discussed further. The remaining 18 plant species and 21 wildlife species are discussed here in more general terms for the region, and are assessed for their potential to occur within the specific project study areas in the Local Setting sections.

Special-Status Plants

Special-status plant species occurring in the project region are presented in **Table 3.5-1**. Special-status plant species addressed in this document include those listed as endangered, threatened, rare, or those species proposed for listing by USFWS and CDFW, and/or as identified as rare plants (California Rare Plant Rank [CRPR] 1–4) by the CDFW (2018b).

TABLE 3.5-1
SPECIAL-STATUS PLANT SPECIES OCCURRING IN THE PROJECT REGION

Species	Status	Habitat and Distribution	Blooming Period
Astragalus hornii var. *hornii* Horn's milk-vetch	US: – CA: – CRPR: 1B.1	Annual herb of alkaline sinks and wetland riparian areas of the San Joaquin Valley, Western Transverse Ranges, west edge of the Mojave Desert at 200 to 2,400-foot elevation.	May–September
Astragalus preussii var. *laxiflorus* Lancaster milk-vetch	US: – CA: – CRPR: 1B.1	Annual herb found in chenopod (saltbush) scrub at approximately 2,000-foot elevation.	March–May
California macrophylla round-leaved filaree	US: – CA: – CRPR: 1B.2	Annual herb found in clay soils within cismontane woodland and valley and foothill grassland at elevations of 45 to 3,935 feet.	March–May
Calochortus striatus alkali mariposa-lily	US: – CA: – CRPR: 1B.2	Perennial herb found in alkali depressions supporting chenopod scrub at elevations from 2,500 to 4,000 feet.	April–June
Canbya candida White pygmy poppy	US: – CA: – CRPR: 4.2	Annual herb found in Joshua tree woodland, Mojave desert scrubs, and pinyon and juniper woodlands with gravelly, sandy, or granitic soils at elevations of 2,000 to 5,000 feet.	March–June
Chorizanthe spinosa Mojave spineflower	US: – CA: – CRPR: 4.2	Annual herb found in chenopod scrub, Joshua tree woodland, Mojave desert scrubs, and playas at elevations of 20 to 4,000 feet.	March–July
Cymopterus deserticola desert cymopterus	US: – CA: – CRPR: 1B.2	Perennial herb found in Joshua tree woodland and Mojave desert scrubs with sandy soils at elevations of 2,000 to 5,000 feet.	March–May
Delphinium recurvatum Recurved larkspur	US: – CA: – CRPR: 1B.2	Perennial herb found in chenopod scrub, cismontane woodland, and valley and foothill grasslands with alkaline soils at elevations of 10 to 2,500 feet.	March–June
Eriastrum rosamondense Rosamond eriastrum	US: – CA: – CRPR: 1B.1	Annual herb found within chenopod scrub (openings), vernal pools (edges) and alkaline hummocks, often in sandy soils, at elevations of 2,295 to 2,345 feet.	April-July
Eriophyllum mohavense Barstow woolly sunflower	US: – CA: – CNPS: 1B.2	Annual herb found in chenopod scrub, Mojave desert scrubs and playas at elevations of 1,500 to 2,500 feet.	March–May
Eschscholzia minutiflora ssp. *twisselmannii* Red Rock poppy	US: – CA: – CRPR: 1B.2	Annual herb found in Mojave desert scrubs that supports volcanic tuff at elevations of 2,000 to 4,000 feet.	March–May
Layia heterotricha pale-yellow layia	US: – CA: – CRPR: 1B.1	Annual herb found in alkaline or clay soils within cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland at elevations of 980 to 5,595 feet.	March–June
Loeflingia squarrosa var. *artemisiarum* sagebrush loeflingia	US: – CA: – CRPR: 2B.2	Annual herb found in desert dunes, Great Basin and Sonoran desert scrubs with sandy soils at 2,000 to 5,000-foot elevation.	April–May
Navarretia setiloba *Piute Mountains navarretia*	US: – CA: – CRPR: 1B.1	Annual herb found in clay or gravelly loam soils within cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland at elevations of 935 to 6,890 feet.	April–July
Phacelia nashiana Charlotte's phacelia	US: – CA: – CRPR: 1B.2	Annual herb typically found on east-facing slopes in Joshua tree woodland, Mojave desert scrubs, and pinyon and juniper woodlands with gravelly, sandy, or granitic soils at elevations of 2,000 to 7,000 feet.	June–October
Puccinellia simplex California alkali grass	US: – CA: – CRPR: 1B.2	Annual herb found in alkaline, vernally mesic; sinks, flats, and lake margins within chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools at elevations of 5 to 3,050 feet.	March–May

Species	Status	Habitat and Distribution	Blooming Period
Saltugilia latimeri *Latimer's woodland-gilia*	US: – CA: – CRPR: 1B.2	Annual herb found in rocky or sandy, often granitic, sometimes washes within chaparral, Mojavean desert scrub, and pinyon and juniper woodland at elevations of 1,310 to 6,235 feet.	March–June
Senna covesii *Coves' cassia*	US: – CA: – CRPR: 2B.2	Perennial herb found in dry, sandy desert washes and slopes within Sonoran desert scrub at elevations of 735 to 4,250 feet.	March–June

US: Federal Designations
E: Federally listed, endangered

CA: State Designations
E: State-listed, endangered

California Rare Plant Rank (CRPR) designations (CDFW, 2018b):
1A. Presumed extirpated in California and either rare or extinct elsewhere
1B. Rare or Endangered in California and elsewhere
2A. Presumed extirpated in California, but more common elsewhere
2B. Rare or Endangered in California, but more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

CRPR extension meanings (i.e., Threat Ranks) (CDFW, 2018b):
1 Seriously endangered in California (over 80 percent of occurrences threatened or have high degree and immediacy of threat).
2 Fairly endangered in California (20–80 percent occurrences threatened).

Source: California Natural Diversity Database (CDFW, 2018a), California Native Plant Society Electronic Inventory (CNPS, 2018)
USGS 7.5-minute topographical quads searched: Bissell, Cache Peak, California City South, Edwards, Little Buttes, Mojave, Mojave NE, Monolith, Redman, Rosamond, Rosamond Lake, Sanborn, Soledad Mountain, Tehachapi North, Tehachapi NE, Tehachapi South, Tylerhorse Canyon, Willow Springs.

Special-Status Wildlife

Special-status wildlife species occurring in the project region are presented in **Table 3.5-2** and discussed further in the Local Setting Section. This list was prepared from searches of the CNDDB and INRMP, and from a compilation of reports for proposed projects in the region, including this project. Additionally, the *Final Biological Technical Report for the Oro Verde Enhanced Use Lease and Gen-Tie Study Areas, Edwards Air Force Base* was reviewed (ECORP, 2013). Special-status wildlife species include:

- Those listed as Endangered or Threatened and those species proposed for listing by USFWS and CDFW
- Those listed as Fully Protected by CDFW
- Birds listed by USFWS as Birds of Conservation Concern (BCC)
- CDFW Species of Special Concern (SSC)

Bird, amphibian, or reptile species whose only status is on the watch list were not included in this table.

TABLE 3.5-2
SPECIAL-STATUS WILDLIFE SPECIES OCCURRING IN THE PROJECT REGION

Species	Status	Habitat and Distribution
REPTILES		
Anniella pulchra northern California legless lizard	CA: SSC	Found in stabilized dunes, beaches, dry washes, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils.
Gopherus agassizii desert tortoise	US: T CA: T	Historically found throughout the Mojave and Sonoran Deserts. Found in the open desert as well as in oases, riverbanks, washes, dunes, and occasionally rocky slopes that support creosote bush scrub, saltbush scrub, and Joshua tree woodland.
BIRDS		
Aquila chrysaetos golden eagle	US: – BGEPA, BCC CA: FP	Found in open and semi-open areas such as prairie, tundra, sparse woodlands and desert scrub habitats. Nests on steep high-elevation cliffs and forages in large areas surrounding nesting sites.
Asio flammeus short-eared owl	US: – CA: SSC	Found in disturbed habitats such as old croplands and windrows, as well as grasslands. Not known to nest in desert scrub habitats in California (Roberson, 2008).
Athene cunicularia burrowing owl	US: BCC CA: SSC	Found mainly in grassland and open scrub from the seashore to foothills. Strongly associated with ground squirrel burrows and burrows of other small mammals.
Buteo regalis ferruginous hawk	US: BCC CA: WL	Range spans from western North America, north to Canada in summer, and south to Mexico in winter. Winters in Antelope Valley where it forages in open fields.
Buteo swainsoni Swainson's hawk	US: BCC CA: T	Migrant that breeds in North America and winters in South America. Nests in large trees, often in riparian habitat and adjacent to open habitat. Forages in open grasslands, agricultural areas, sparse shrublands, and small open woodlands. During breeding season, eats mammals, birds, and reptiles. The rest of the year it eats insects, especially grasshoppers and dragonflies.
Charadrius montanus mountain plover	US: BCC CA: SSC	Found in open areas dominated by bare ground or low-growing vegetation and abundant prey.
Circus cyaneus northern harrier	US: – CA: SSC	Found in open areas dominated by low-growing vegetation with suitable perches available. Breeds and forages in a variety of habitats such as deserts, floodplains, croplands, agricultural areas, and grasslands.
Falco mexicanus prairie falcon	US: BCC CA: WL	Found primarily in open areas such as plains and prairies with steep vertical cliffs for nesting.
Lanius ludovicianus loggerhead shrike	US: BCC CA: SSC	Occurs in semi-open country with utility posts, wires, and trees to perch on. Nests in bushes and trees.
Spinus (*Carduelis*) *lawrencei* Lawrence's goldfinch (nesting)	US: BCC	Valley foothill hardwood, valley foothill hardwood-conifer, desert riparian, palm oasis, pinyon-juniper and lower montane habitats.
Toxostoma lecontei Le Conte's thrasher	US: BCC CA: SSC	Open desert wash, creosote scrub, alkali desert scrub, desert succulent scrub.

Species	Status	Habitat and Distribution
MAMMALS		
Antrozous pallidus pallid bat	US: – CA: SSC	Arid habitats, including grasslands, shrublands, woodlands and forests; for roosting, prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging.
Corynorhinus townsendii Townsend's big-eared bat	US: – CA: SSC	Typically found in coniferous and deciduous forests; uses caves, mines, and buildings for roosts.
Euderma maculatum spotted bat	CA: SSC	Foothills, mountains, desert regions of southern California, including arid deserts, grasslands, and mixed conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes.
Onychomys torridus ramona southern grasshopper mouse	US: – CA: SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover.
Perognathus alticolus inexpectatus Tehachapi pocket mouse	CA: SSC	Arid annual grassland and desert shrub communities, but also taken in fallow grain field and in Russian thistle.
Taxidea taxus American badger	US: – CA: SSC, FBM	Coastal sage scrub, mixed chaparral, grassland, oak woodland, chamise chaparral, mixed conifer, pinyon-juniper, desert scrub, desert wash, montane meadow, open areas, and sandy soils.
Vulpes macrotis arsipus desert kit fox	US: – CA: FBM	Found in desert habitats that include creosote bush, shadscale, greasewood, and sagebrush. This species was included because of heightened concern due to recent issues with disease.
Xerospermophilus mohavensis Mohave ground squirrel	US: – CA: T	Occurs in desert scrub, alkali scrub, and Joshua tree woodland habitats in the Mojave Desert.

US: Federal Designations
T: Federally listed, threatened
BGEPA: Bald and Golden Eagle Protection Act
BCC: Birds of Conservation Concern

CA: State Designations
T: State-listed, threatened
SSC: California Species of Special Concern
FP: Fully Protected
WL: Watch List
FBM: fur-bearing mammal

SOURCE: California Natural Diversity Database (CDFW, 2018a)
USGS 7.5-minute topographical quads searched: Bissell, Cache Peak, California City South, Edwards, Little Buttes, Mojave, Mojave NE, Monolith, Redman, Rosamond, Rosamond Lake, Sanborn, Soledad Mountain, Tehachapi North, Tehachapi NE, Tehachapi South, Tylerhorse Canyon, Willow Springs.

Sensitive Habitats

Sensitive natural communities are designated as such by various resource agencies, such as the CDFW, or in local policies and regulations, and are generally considered to have important functions or values for wildlife and/or are recognized as declining in extent or distribution, and are considered threatened enough to warrant some sort of protection. Sensitive habitats include:

- Designated critical habitat for federal or state listed (endangered and threatened) species

- Waters of the United States and state jurisdictional waters, including waters regulated by CDFW and RWQCB
- CDFW sensitive natural communities (i.e., those with a rank of S1-S3) (CDFW, 2018c)
- Locally sensitive communities

Numerous ephemeral drainages are present within the regional setting area. These drainages are considered isolated and not under the jurisdiction of USACE, consistent with other similar drainages within the Antelope Valley Watershed such as those found not to be jurisdictional, under the approved jurisdictional determination issued for the Sunlight Partners Solar Array Project on June 7, 2013 (USACE, 2013). Figure 3.16-1 shows the Antelope Valley watershed in relation to the region and the EUL and Gen-Tie Study Areas in order to show that these areas do not fall under USACE jurisdiction. A jurisdictional delineation for waters of the state has been conducted on 3,032 acres (Dudek, 2018b). In the remainder of the EUL, a map-based analysis of potentially jurisdictional waters was conducted and is described in detail in the *Local Setting – EUL Study Area*. Additional information related to Waters of the United States, state jurisdictional waters, and waters regulated by RWQCB are presented in Section 3.16, *Hydrology and Water Quality* , of this EIS/EIR.

CDFW tracks communities it believes to be of conservation concern through its list of *California Sensitive Natural Communities* (CDFW, 2018c). Natural communities that historically occur within the project region include valley needlegrass grassland, wildflower fields, and Joshua tree woodlands.

Joshua tree woodlands have a global rank (G-rank) of G4 and a state rank (S-rank) of S3 indicating that this community is uncommon but not rare within its entire range yet vulnerable in the State of California due to its restricted range, relatively few populations, recent and widespread declines, or other factors making it vulnerable to extirpation from California (CDFW, 2018b). In Kern County, this habitat is specifically designated in many local plans, ordinances, and policies as a biological resource of concern. The Mojave Desert region contains approximately 3,646 square miles of Joshua tree woodland. Joshua trees grow on dry stony mesas, flats, and slopes from 2,000 to 6,000 feet in elevation in the Mojave Desert and usually occur in association with desert scrub vegetation.

Wildlife Movement Corridors

Wildlife corridors are defined as linear landscape elements that serve as linkages between historically connected habitats/natural areas, and facilitate movement between these natural areas (Beier and Loe, 1992). Major components of regional wildlife movement corridors include providing opportunities for food, water, shelter, and unimpeded movement between natural areas. Regional documents describing potential linkages show no remaining significant potential linkages in the project region, particularly for the federally and state threatened desert tortoise (Hagerty, 2010; SCWildlands, 2012; USFWS, 2013; Vandergast, 2013). In addition, fencing on the eastern and northern boundaries may limit movement by larger wildlife. While such fencing is permeable for many species, the open spaces in adjacent lands would remain available for movement of wildlife that may be able to travel through these barriers.

The region is within the Pacific Flyway for avian migratory species, with potential for numerous migratory species stopping over for food or shelter resources during migrations.

Local Setting – EUL Study Area

The EUL Study Area is the area within which the solar facilities and associated infrastructure (excluding the gen-tie line) would be built. The EUL Study Area elevations range from 2,440 to 2,565 feet.

General Biological Resources

Vegetation Communities

Vegetation communities in the EUL Study Area are shown on **Figure 3.5-1, Vegetation Communities**. Acreages are also provided in **Table 3.5-3**. The nomenclature for vegetation communities in the EUL Study Area follows the *Manual of California Vegetation* (Sawyer et al., 2009) and the *List of Sensitive Communities* (CDFW, 2018c). The dominant vegetation communities within the EUL Study Area are shadscale scrub and Joshua tree woodland. These communities intergrade frequently with several other vegetation communities, including rubber rabbitbrush scrub, Mojave mixed woody scrub, creosote bush scrub, four-wing saltbush scrub, white bursage scrub, and salt grass flats. In addition, portions of the EUL Study Area have been disturbed by previous land uses or fire and these areas are generally dominated by non-native plant species, such as salt cedar (*Tamarix aphylla*) and Russian thistle (*Salsola tragus*) (ECORP, 2013).

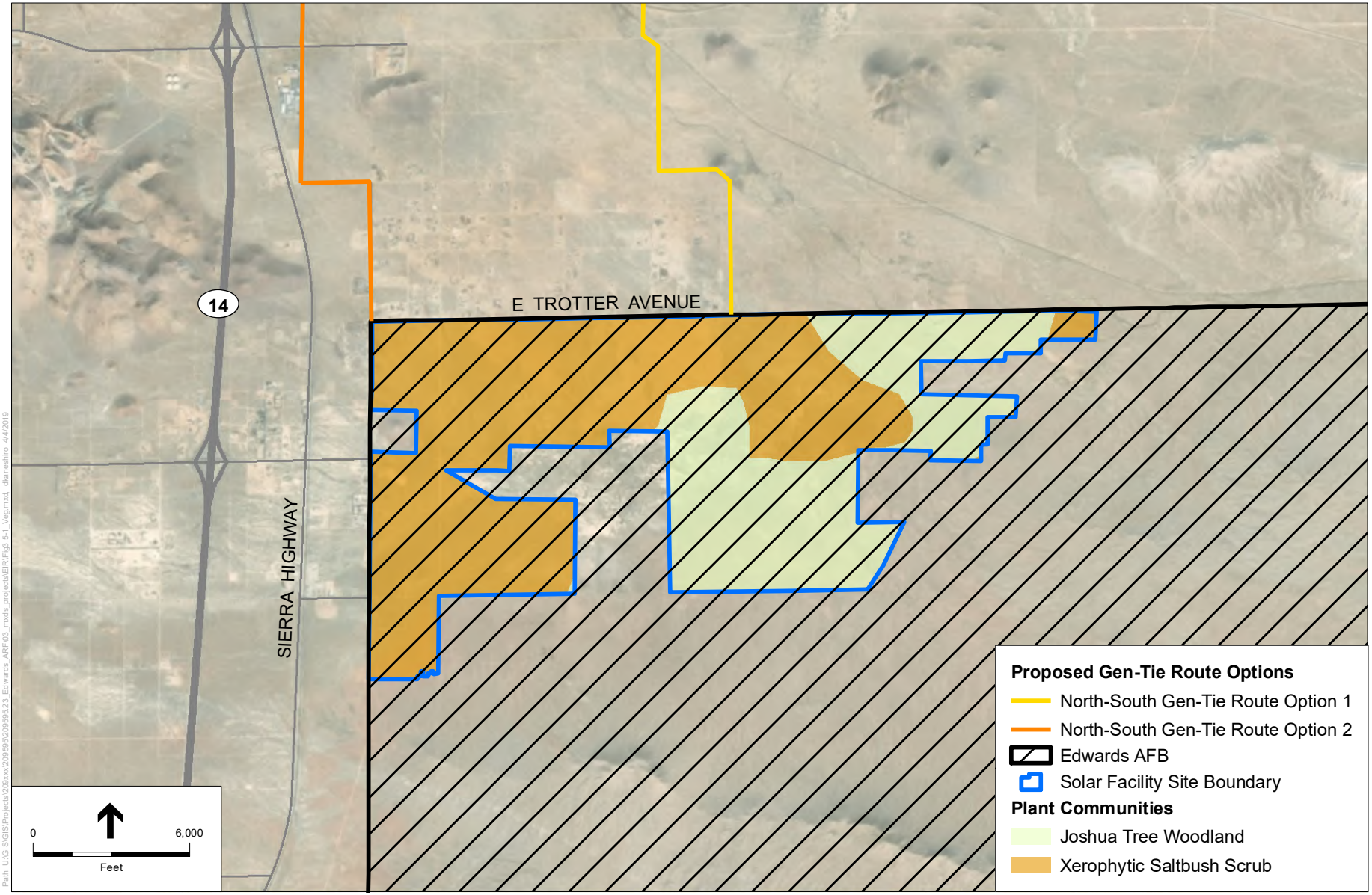


FIGURE 3.5-1: VEGETATION MAP (SOLAR SITE)

TABLE 3.5-3
VEGETATION COMMUNITIES IN THE EUL STUDY AREA

Community	Acres
Joshua Tree Woodland	1,047
Shadscale Scrub	4,019
Four-wing Saltbush Scrub	229
Mojave Mixed Woody Scrub	113
Creosote Bush Scrub	53
White Bursage Scrub	41
Rubber Rabbitbrush Scrub	26
Salt Grass Flats	5
Clay Pans	25
Tamarisk Thickets	1
Burn Area (Russian thistle)	414
Disturbed	12
Total	5,985

SOURCE: ECORP, 2013

Wildlife Resources

Due to the lack of a perennial water source and habitat types present, no fish or amphibian species are expected in the EUL Study Area.

The most common reptiles in the EUL Study Area include the western zebra-tailed lizard, Mojave rattlesnake, desert horned lizard (*Phrynosoma platyrhinos*), and side-blotched lizard. Bird species commonly recorded in the EUL Study Area include red-tailed hawk, California quail, American kestrel (*Falco sparverius*), ash-throated flycatcher (*Myiarchus cinerascens*), and western meadowlark (*Sturnella neglecta*). Mammal species commonly recorded in the EUL Study Area include white-tailed antelope squirrel, coyote, kangaroo rat (*Dipodomys* spp.), black-tailed jackrabbit, and bobcat (*Lynx rufus*).

Special-Status Biological Resources

This section of the EIS/EIR examines the 11 plant and 15 wildlife species identified in the Regional Setting (Section 3.5.3.1) that have records in the vicinity of the EUL Study Area and addresses their potential to occur at the EUL Study Area specifically. Of these, two plant species and six wildlife species are known to occur within the EUL Study Area. The potential to occur was based on the following criteria:

- **Present:** Species was observed in or immediately adjacent to the EUL Study Area during a site visit or focused survey within the past 5 years.
- **High:** Habitat (including appropriate vegetation, soils and elevation factors) and known historical range for the species occurs in the EUL Study Area and a known occurrence has been recorded within 5 miles within the past 20 years.

- **Moderate:** Habitat for the species occurs in the EUL Study Area and a known occurrence exists in the database search, between 5 and 10 miles away, recorded within the past 20 years.
- **Low:** Limited or no suitable habitat for the species occurs in the EUL Study Area and a known occurrence is greater than 10 miles from the EUL Study Area or over 20 years old (as many focused botanical and wildlife surveys have been conducted within the project region in the past 20 years).

Special-Status Plants

Table 3.5-4 lists the potential for special-status plants to occur at the EUL Study Area and an explanation of how that level of potential was determined. Species with a moderate or higher potential to occur are discussed in more detail.

TABLE 3.5-4
SPECIAL-STATUS PLANT SPECIES POTENTIAL TO OCCUR IN THE EUL STUDY AREA

Species	Status	Potential to Occur	Explanation
Astragalus hornii var. *hornii* Horn's milk-vetch	US: – CA: – CRPR: 1B.1	Low	Suitable habitat is present in the EUL Study Area with a record approximately 9 miles away, but was last recorded in 1931 (CDFW, 2018a).
Astragalus preussii var. *laxiflorus* Lancaster milk-vetch	US: – CA: – CRPR: 1B.1	Low	Suitable habitat is present in the EUL Study Area with a record approximately 15 miles away, but was last recorded in 1993 (CDFW, 2018a).
Calochortus striatus alkali mariposa-lily	US: – CA: – CRPR: 1B.2	Present	Species was recorded during surveys in 2013 and 1995 within the EUL Study Area.
Canbya candida white pygmy poppy	US: – CA: – CRPR: 4.2	Low	Suitable habitat is present in the EUL Study Area with a record approximately 5 miles away(CDFW, 2018a), but was last recorded in 1935 and 1965.
Chorizanthe spinosa Mojave spineflower	US: – CA: – CRPR: 4.2	Present	Species was recorded during surveys in 2013 and 1995 within the EUL Study Area.
Cymopterus deserticola desert cymopterus	US: – CA: – CRPR: 1B.2	Moderate	Suitable habitat is present in the EUL Study Area with records in areas surrounding the EUL Study Area from 1995.
Delphinium recurvatum recurved larkspur	US: – CA: – CRPR: 1B.2	High	Suitable habitat is present in the xerophytic saltbush scrub communities and a population was recorded 0.5 miles southwest of the EUL Study Area in 2011 (CDFW, 2018a).
Eriophyllum mohavense Barstow woolly sunflower	US: – CA: – CRPR: 1B.2	Moderate	Suitable habitat is present in the EUL Study Area with records to the north and south of the EUL Study Area from 1995 and 2005 (CDFW, 2018a).
Eschscholzia minutiflora ssp. *twisselmannii* Red Rock poppy	US: – CA: – CRPR: 1B.2	Low	Suitable habitat is present in the rocky outcrop in the northwest portion of the EUL Study Area and populations were recorded approximately 7 miles to the southeast between 1932 and 1977 (CDFW, 2018a).

Species	Status	Potential to Occur	Explanation
Loeflingia squarrosa var. *artemisiarum* sagebrush loeflingia	US: – CA: – CRPR: 2.2	High	Suitable habitat is present in the sandy soils throughout the EUL Study Area with several populations documented near the site, most recently in 1998.
Phacelia nashiana Charlotte's phacelia	US: – CA: – CRPR: 1B.2	Low	Marginal habitat is present throughout the EUL Study Area and populations have been documented approximately 16 miles to the north in higher elevations (CDFW, 2018a).

Federally and State Listed Species

No federally or state listed plant species are expected in the EUL Study area.

Other Special-Status Species

The **alkali mariposa lily (*Calochortus striatus*)** is a bulb-forming perennial that is typically found in alkaline meadows and ephemeral washes in chaparral, chenopod scrub, and Mojavean desert scrub habitats. The alkali mariposa lily was observed incidentally during the 2013 desert tortoise surveys conducted in the EUL Study Area, and in 1995 four populations were identified in the EUL Study Area (ECORP, 2013). A population has been recorded along Sierra Highway near Sopp Road, approximately 0.5 mile west of the southwest portion of the EUL Study Area (CDFW, 2018a, 2018c). Suitable habitat for this species is present in the xerophytic saltbush scrub communities and ephemeral washes with claypans and playas, primarily in the central and western portions of the EUL Study Area.

The **Mojave spineflower (*Chorizanthe spinosa*)** is a low-growing herbaceous plant that occurs in bare or disturbed areas in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and playas. This species was observed incidentally during 2012 and 2013 surveys in the northwestern portions of the EUL Study Area (ECORP, 2013), as well as in past surveys (AFFTC, 1993; AECOM, 2010). Suitable habitat for this species is present throughout the EUL Study Area, but they have been primarily observed in the western portion in xerophytic saltbush scrub supporting playas and bare or disturbed areas. Mojave spineflower is locally common off base in the Rosamond area (EAFB, 2017).

The **desert cymopterus (*Cymopterus deserticola*)** is found in Joshua tree woodland and Mojavean desert scrub with sandy soils. The most recent records of this species include 1995 surveys that identified several populations in the central and eastern portions of Edwards AFB, with the closest record located approximately 6 miles east of the EUL Study Area (ECORP, 2013). Based on the presence of suitable vegetation communities and sandy soils throughout the majority of the EUL Study Area and records greater than 5 miles away, this species has a moderate potential to occur. Geographic information system-based (GIS) modeling and ground surveys indicate it is unlikely for this species to occur within the EUL Study Area.

The **recurved larkspur (*Delphinium recurvatum*)** is found in chenopod scrub, cismontane woodland, and valley and foothill grassland with alkaline soils. In 2011, this species was reported north of the town of Rosamond and south of Backus Road, which is approximately 0.5 miles southwest of the western portion of the EUL Study Area (CDFW, 2018a, 2018c). Based on the

presence of suitable habitat in the xerophytic saltbush scrub communities in the central and western portions of the EUL Study Area and a recent record nearby, this species has a high potential to occur.

The **Barstow woolly sunflower (*Eriophyllum mohavense*)** is typically found in areas with silty or sandy soils in desert playas, desert chenopod scrub, and Mojavean desert scrub habitats. In 2005, this species was reported near the Hyundai test track, which is approximately 6 miles north of the EUL Study Area (CDFW, 2018a, 2018c). In 1995, 30 distinct populations of Barstow woolly sunflower were found across Edwards AFB, the closest of which was approximately 8 miles south of the EUL Study Area (ECORP, 2013). Based on the presence of suitable habitat in the xerophytic saltbush scrub communities supporting claypans and playas in the central and western portions of the EUL Study Area and a record located more than 5 miles away, this species has a moderate potential to occur.

The **sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)** is found in desert dunes, Great Basin scrub, and Sonoran Desert scrub in sandy areas. In 1998, this species was recorded approximately 0.5 mile northwest of the EUL Study Area (CDFW, 2018a, 2018c). Based on the presence of sandy soils throughout the majority of the EUL Study Area and a record nearby, this species has a high potential to occur.

Special-Status Wildlife

Table 3.5-5 lists the potential for special-status wildlife species to occur at the EUL Study Area and an explanation of how that level of potential was determined. All species have a moderate or higher potential to occur except the Mohave ground squirrel and mountain plover which both have a low potential to occur.

TABLE 3.5-5
SPECIAL-STATUS WILDLIFE SPECIES' POTENTIAL TO OCCUR IN THE EUL STUDY AREA

Species	Status	Potential to Occur	Explanation
REPTILES			
Gopherus agassizii desert tortoise	US: T CA: T	Present	Observed during 2013 focused surveys of the EUL Study Area (ECORP, 2013) and has been recorded there in the past.
BIRDS			
Aquila chrysaetos golden eagle	US: – , BGEPA, BCC CA: FP	Moderate (foraging only)	Nesting habitat is not present in the EUL Study Area. Moderate potential to occur during winter and dispersal. The nearest CNDDB occurrence is from approximately 2 miles from the site (1.8 miles southwest of the intersection of State Route 14 and Silver Queen Road), although the location is not known to have been occupied since 1969 (CDFW, 2018a).
Asio flammeus short-eared owl	US: – CA: SSC	Present	Observed during 2013 surveys of the EUL Study Area, but the species is not likely to nest, due to the absence of suitable nesting habitat.
Athene cunicularia burrowing owl	US: BCC CA: SSC	Present	Observed during 2013 surveys of the EUL Study Area. A total of 30 occupied burrows were observed and recorded (ECORP, 2013).

Species	Status	Potential to Occur	Explanation
Buteo regalis ferruginous hawk	US: – , BCC CA: WL	Low (foraging only)	Nesting habitat is not present in the EUL Study Area and the site is not in the breeding range of the species, but abundant foraging habitat is present and recent records are found within 10 miles.
Buteo swainsoni Swainson's hawk	US: – , BCC CA: T	Low (nesting), Moderate (dispersal and migration)	Not expected to nest because of the lack of recorded nesting within 5 miles of the site and the absence of optimal foraging habitat in the EUL Study Area or vicinity. However, migrating and dispersing hawks may forage in the desert scrub in the EUL Study Area.
Charadrius montanus mountain plover	US: – , BCC CA: SSC	Low	This species does not nest in California. Limited wintering habitat is present and recent records are found within 10 miles.
Circus cyaneus northern harrier	US: – CA: SSC	High (foraging only)	The EUL Study Area is outside of the known range of the species (Davis and Niemela, 2008), but individuals may forage in the EUL Study Area.
Falco mexicanus prairie falcon	US: – , BCC CA: WL	High (foraging only)	Nesting habitat is not present in the EUL Study Area, but abundant foraging habitat is present and recent records are found within 5 miles.
Lanius ludovicianus loggerhead shrike	US: – , BCC CA: SSC	Present	Active nests observed during 2013 surveys of the EUL Study Area (ECORP, 2013).
MAMMALS			
Corynorhinus townsendii Townsend's big-eared bat	US: – CA: SSC	Low (foraging only)	Nesting habitat is not present in the EUL Study Area, but abundant foraging habitat is present and recent records are found within 5 miles.
Taxidea taxus American badger	US: – CA: SSC	Present	Active sign observed, including potential dens, during 2013 surveys of the EUL Study Area (ECORP, 2013).
Vulpes macrotis arsipus desert kit fox	US: – CA: –	Present	Active sign, including one known den, observed during 2013 surveys of the EUL Study Area (ECORP, 2013).
Xerospermophilus mohavensis Mohave ground squirrel	US: – CA: T	Low	Suitable but low-quality habitat is present in the EUL Study Area. Occurrence records in the project region inside and outside the base support the conclusion that there is a low potential for species to occur in the EUL Study Area. On-site focused trapping surveys during 2018 identified none (Brylski, 2018a).

Federally and State Listed Species

The **desert tortoise (*Gopherus agassizii*)** is found in Mojave Desert habitats that support soils suitable for digging stable burrows (neither too sandy nor too rocky). It forages on annual grasses and forbs, perennial shrubs and grasses, and cacti. Desert tortoises have been observed in the EUL Study Area during multiple surveys conducted since 2003. Suitable habitat for desert tortoise is present throughout the EUL Study Area. Although densities of desert tortoise are difficult to determine with existing data (ECORP, 2013; Tetra Tech, 2008), they likely occur at low densities throughout the EUL Study Area based on numbers recorded during recent surveys (ECORP, 2013).

A 2014 U.S. Fish and Wildlife Service Biological Opinion for Operations and Activities at Edwards Air Force Base, California (8-8-14-F-14) identifies terms and conditions required to protect the desert tortoise in accordance with Section 7 of the Federal ESA. This Biological Opinion covers the future development of solar facilities and the construction of a gen-tie line to the Windhub Substation (USFWS, 2014a). The Biological Opinion determined that the loss of habitat due to development of up to 4,000 acres for a proposed solar project was unlikely to appreciably reduce the distribution of the desert tortoise in relation to the range of the listed taxon. Desert tortoises may be relocated in accordance with the biological opinion.

The **Swainson's hawk (*Buteo swainsoni*)** prefers grasslands, grain, or alfalfa fields and livestock pastures for foraging and prefers to nest in stands with few trees in juniper-sage flats, riparian areas, and oak savannah (Polite, 2006). Its diet consists mainly of mammals and other vertebrates. Suitable foraging habitat occurs throughout the EUL Study Area, but nesting habitat is limited to Joshua tree woodlands and the tamarisk thickets. Surveys of the gen-tie and 5-mile buffer in 2017 covered much of the area within 5 miles of the EUL Study Area (Dudek, 2017). These surveys were negative, and CNDDB includes no occurrences within approximately 9 miles of the EUL Study Area (CDFW, 2018a).

The **Mohave ground squirrel *(Xerospermophilus mohavensis)*** is found in flat to moderately sloping desert habitats with friable soils and abundant annual vegetation. Its diet includes foliage, flowers, and seeds of shrubs and annual plants. This species is active between the months of March and July and hibernates between August and February (Johnson, 1990). Mohave ground squirrel have been reported in a range of open desert habitats (Gustavson, 1993), which are found in the EUL Study Area; however, the habitat in the EUL Study Area is of low quality (Brylski, 2018a). Moreover, trapping conducted in and near the EUL Study Area (which is in the far northwest area of Edwards AFB) since 1973 did not record presence of this species (Brylski, 2018a). Leitner's findings are consistent with the literature review and habitat assessment performed by Brylski (2018a). These absence findings are also consistent with absence findings to the immediate north and west of the western boundary of Edwards AFB and consistent with trapping surveys conducted in 2018, in which no Mohave ground squirrels were detected. The rarity of Mohave ground squirrel occurrences in the northwestern portion of the base, and in Rosamond/Mojave areas outside the base, is likely related to the location on the extreme western edge of the species' range (Brylski, 2018a).

Other Special-Status Species

The **golden eagle (*Aquila chrysaetos*)** is typically found in open and semi-open areas, such as prairie, tundra, sparse woodlands, and sagebrush habitats, where it feeds primarily on lagomorphs and squirrels. Golden eagles will also occasionally prey upon larger mammals, birds, and snakes and they are known to feed on carrion. This species builds very large (10-foot-wide) stick nests on cliffs of all heights or in sturdy trees that are in rugged, open habitat with canyons and escarpments nearby (Polite and Pratt, 1990). Nesting habitat is not present in the EUL Study Area. The nearest CNDDB occurrence is from approximately 2 miles from the site (1.8 miles southwest of the intersection of State Route (SR) 14 and Silver Queen Road), although the location is not known to have been occupied since 1969 (CDFW, 2018a). The next nearest occurrence of nesting activity is 16 miles northwest of the EUL Study Area. The species is generally expected to nest in the Tehachapi Mountains to the north and west, and potentially occur in the vicinity in winter and during dispersal, but nesting habitat is absent from the site.

The **short-eared owl (*Asio flammeus*)** is found in a wide variety of open habitats with low vegetation including marshes, dunes, prairies, grassy plains, fields, tundra, meadows, savannah, and open woodlands. Its primary prey is small rodents, but it will also take small birds and insects. Short-eared owl was observed in EUL Study Area in 2013, but the individual may have been a migrant rather than nesting in the area. Nesting was suspected once in the Antelope Valley, but this species is not known to nest in desert scrub habitats in California (Roberson, 2008).

The **burrowing owl (*Athene cunicularia*)** is typically found in dry open areas with few trees and short grasses, as well as disturbed open habitats like agricultural fields. Burrowing owls use uninhabited burrows for roosts and nests and primarily feed on large insects. Burrowing owls and their sign were observed throughout the EUL Study Area in 2012. This species likely nests in the EUL Study Area during the breeding season (February 1 to August 31) with solitary individuals located year-round. A total of 30 occupied burrows were observed and recorded (ECORP, 2013).

The **ferruginous hawk (*Buteo regalis*)** is typically found in prairies and plains, but is also found in sagebrush and desert habitats. Its diet primarily consists of mammals, including ground squirrels and jackrabbits. This species does not nest in California and does not typically forage in desert scrub. Ferruginous hawk in the Antelope Valley typically forage in and around agricultural fields and grasslands. This species is a frequent resident of southern California deserts during winter months (ECORP, 2013).

The **mountain plover (*Charadrius montanus*)** uses open grasslands, plowed fields with little vegetation, and open sagebrush areas to forage and roost. Its diet consists of insects. There are no records of this species nesting in California, although they have been recorded throughout the desert areas during migratory periods. Suitable habitat areas in the EUL Study Area would include the disturbed areas that support annual grasses in the northwestern corner and the open playas near the center, which is very limited in the EUL Study Area.

The **northern harrier (*Circus cyaneus*)** is found in a range of habitats, including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, and old agricultural fields; and forages in open areas typically dominated by low-growing vegetation with available perches such as fence

posts or sturdy shrubs nearby. Its diet consists of small- to medium-sized vertebrates such as songbirds and rodents (CDFG, 2008). The EUL Study Area is outside of the known nesting range of the species (Davis and Niemela, 2008), but individuals may forage in the EUL Study Area and recent records are found within 5 miles.

The **prairie falcon (*Falco mexicanus*)** is found primarily in open areas such as plains and prairies with steep vertical cliffs for nesting. Its diet includes small mammals, lizards, and birds. Although abundant foraging habitat is present within the EUL Study Area, there is no suitable nesting habitat.

The **loggerhead shrike (*Lanius ludovicianus*)** prefers open areas with scattered trees and shrubs, including savannah, desert scrub, and open woodland habitats. Its diet includes large insects and other invertebrates, but it will also prey upon small mammals, lizards, and snakes. Suitable foraging and nesting habitat is present throughout the EUL Study Area.

The **Townsend's big-eared bat (*Corynorhinus townsendii*)** can be found in many different habitats, including desert scrubs, and uses caves, mines, and buildings for roosts. Its diet consists primarily of flying insects, particularly moths. This species has been detected at Soledad Mountain approximately 3 miles west of the EUL Study Area and, although suitable roosting habitat is not present within the EUL Study Area, this species may forage at the site.

The **American badger (*Taxidea taxus*)** is a Species of Concern and a species with additional protections as a fur-bearing mammal. This species is found in a wide variety of habitats that support sparse groundcover. Badgers feed primarily on small rodents. This species was detected throughout the EUL Study Area in 2013 (ECORP, 2013).

The **desert kit fox (*Vulpes macrotis arsipus*)** is found in desert habitats, including all of those present at the EUL Study Area. Desert kit foxes feed primarily on nocturnal rodents and rabbits. This species was detected throughout the EUL Study Area in 2013 (ECORP, 2013). While not a listed or special-status species, desert kit foxes are protected as a fur-bearing mammal in California and have been the subject of heightened concern to CDFW in the past several years after an outbreak of canine distemper killed a number of animals in the eastern California desert areas (personal communication, Dr. Deanna Clifford, CDFW).

The **southern grasshopper mouse (*Onychomys torridus ramona*)** is found in desert habitats, including all of those present at the EUL Study Area. Southern grasshopper mice are carnivorous, feeding on insects and other small mammals. This species was detected throughout the EUL Study Area during trapping studies conducted throughout Edwards AFB in 2008 and the likelihood is high that they continue to inhabit the area.

Sensitive Habitats

No critical habitat for federally or State listed (endangered or threatened) species is present within the EUL Study Area.

Ephemeral drainages are present within the EUL Study Area. These drainages are not USACE-jurisdictional under the approved determination issued for the Sunlight Partners Solar Array Project on June 7, 2013 (USACE, 2013). A jurisdictional delineation has been conducted on 3,032 acres

of the EUL Study Area (Dudek, 2018b) for waters of the state. In the 3,032-acre portion of the EUL Study Area where a formal jurisdictional delineation was completed, there are approximately 9.4 acres of ephemeral, non-vegetated swales under the jurisdiction of CDFW and RWQCB.

In the remainder of the EUL Study Area, a map-based analysis of the site has been done, as described above. Based on the NWI data (USFWS, 2017), 215 acres of CDFW- and RWQCB-jurisdictional waters are potentially present. However, based on the formal jurisdictional delineation performed on a portion of the EUL Study Area, it is likely that there are actually fewer jurisdictional features in the area not yet subject to field assessment. The developer has indicated an intent to avoid jurisdictional areas if feasible. A pre-project jurisdictional delineation in the field in areas where map-based analysis was performed would refine the location and extent of any additional jurisdictional resources, and where they can be avoided or impacts reduced. If avoidance is not feasible, it is anticipated that the impacts to waters of the state would be small (less than 1 acre.) Additional information related to Waters of the United States, state jurisdictional waters, and waters regulated by RWQCB are found in Section 3.16, *Hydrology and Water Quality Resources*, of this EIS/EIR.

No valley needlegrass grasslands are present within the EUL Study Area.

Approximately 1,047 acres of Joshua tree woodlands are present in the EUL Study Area (Figure 3.5-1).

Wildlife Movement Corridors

The partially unimpeded open nature of the EUL Study Area currently allows for easy movement of wildlife through the area. Surveys conducted in 2012, 2013, 2017, and 2018 did not record significant pathways of tracks for larger species that might be considered regional wildlife movement corridors. Larger wildlife species are somewhat restricted from moving north and west of the EUL Study Area because of an 8-foot tall chain-link fence along the western EUL Study Area boundary that extends approximately 2.5 miles east of the northwest corner of the EUL Study Area (the remaining northern boundary is barbed wire fencing). Many larger mammals and desert tortoises would still be able to move through this fence using holes under the fence (tortoises, coyotes) or jumping over the fence (large cats, kit foxes).

Local Setting – Gen-Tie Study Area

The Gen-Tie Study Area is the larger area within which the project's gen-tie line would be built. Surveys were conducted in the Gen-Tie Study Area in 2017 (Dudek, 2018a) and were used to determine the potential for these resources to be present.

General Biological Resources

Vegetation Communities

Vegetation communities in the Gen-Tie Study Area are shown on Figures 3-1A through 3-1AA in Appendix B4. Acreages are also provided in **Table 3.5-6**. The dominant vegetation communities within the Gen-Tie Study Area are creosote bush scrub, allscale scrub, non-native grassland, and Joshua tree woodland. In addition, portions of the Gen-Tie Study Area have been disturbed from

previous land uses and these areas support non-native plant species, including Russian thistle, salt cedar trees, and non-native grasses.

TABLE 3.5-6
VEGETATION COMMUNITIES IN THE GEN-TIE STUDY AREA

Community	East– West (acres)	North–South Option 1 (acres)	North–South Option 2 (acres)
Allscale Scrub	57	239	5
Rubber Rabbitbrush Scrub	1	—	—
Non-native Grassland	84	—	—
Cheesebush Scrub	—	26	—
Creosote Bush Scrub	363	17	15
Creosote Bush Scrub–White Burr Sage Scrub	—	—	1
Joshua Tree Woodland	17	18	—
White Bursage	—	12	—
Disturbed Habitat	57	13	33
Urban/Developed	21	1	—

Wildlife Resources

Due to the lack of a perennial water source and habitat types present, no fish or amphibian species are expected in the Gen-Tie Study Area. General wildlife resources are likely to be similar to those described for the region and EUL Study Area.

Special-Status Biological Resources

This section of the EIS/EIR examines the 18 plant and 21 wildlife species identified in the Regional Setting that were initially determined to have potential to occur in the Gen-Tie Study Area. The potential to occur was based on the following criteria:

- **Present:** Species was observed in or immediately adjacent to the Gen-Tie Study Area during a site visit or focused survey within the past 5 years.
- **High:** Habitat (including soils and elevation factors) and known historical range for the species occurs in the Gen-Tie Study Area and a known occurrence has been recorded within 5 miles within the past 20 years.
- **Moderate:** Habitat for the species occurs in the Gen-Tie Study Area and a known occurrence exists in the database search, between 5 and 10 miles away, recorded within the past 20 years.
- **Low:** Limited or no habitat for the species occurs in the Gen-Tie Study Area and a known occurrence is greater than 10 miles from the Gen-Tie Study Area or over 20 years old (as many focused botanical and wildlife surveys have been conducted within the project region in the past 20 years).

Special-Status Plants

Table 3.5-7 lists the potential for special-status plants to occur at the Gen-Tie Study Area and an explanation of how that level of potential was determined. Species with a moderate or higher potential to occur are discussed in more detail. Special-status plants that are not expected to occur due to lack of suitable vegetation or because the site is outside of the known elevation range of the species are listed in Appendix B4. These species are not discussed further because no significant direct, indirect, or cumulative impacts are expected to result from the proposed project.

TABLE 3.5-7
SPECIAL-STATUS PLANT SPECIES POTENTIAL TO OCCUR IN THE GEN-TIE STUDY AREA

Species	Status	Potential to Occur	Explanation
Astragalus preussii var. *laxiflorus* Lancaster milk-vetch	US: – CA: – CRPR: 1B.1	Low	Not observed. Conspicuous perennial herb that would have been detected during focused surveys if present.
California macrophylla round-leaved filaree	US: – CA: – CRPR: 1B.2	Low	Not observed. Species was detectable at time of focused survey based on reference population checks.
Calochortus striatus alkali mariposa-lily	US: – CA: – CRPR: 1B.2	Low	Not observed. Species was detectable at time of focused survey based on reference population checks.
Canbya candida white pygmy poppy	US: – CA: – CRPR: 4.2	Low	Suitable habitat is present in the Gen-Tie Study Area with a record approximately 5 miles away, but was last recorded in 1935 and 1965.
Chorizanthe spinosa Mojave spineflower	US: – CA: – CRPR: 4.2	Low	Suitable habitat is present throughout the Gen-Tie Study Area in Joshua tree woodlands and allscale scrub communities and multiple populations have been recorded within 1 mile. However, this species was not observed during focused surveys.
Cymopterus deserticola desert cymopterus	US: – CA: – CRPR: 1B.2	Low	Not observed. Species was detectable at time of focused survey based on reference population checks.
Delphinium recurvatum recurved larkspur	US: – CA: – CRPR: 1B.2	Low	Not observed. Species was detectable at time of focused survey based on reference population checks.
Eriastrum rosamondense Rosamond eriastrum	US: – CA: – CRPR: 1B.1	Low	Not observed. Closest known occurrence is located 13 miles away. Species is typically found on hard packed sandy cryptogamic soil among low hummocks with dry pools, which is not present in the study area (Jepson Flora Project 2017).
Eriophyllum mohavense Barstow woolly sunflower	US: – CA: – CRPR: 1B.2	Low	Not observed. Closest known occurrence is located 6 miles away and suitable habitat present. However, 2017 results were negative.
Eschscholzia minutiflora ssp. *twisselmannii* Red Rock poppy	US: – CA: – CRPR: 1B.2	Low	Not observed. Closest known occurrence is located 12 miles away on Edwards AFB. Volcanic tuff not present.
Layia heterotricha pale-yellow layia	US: – CA: – CRPR: 1B.2	Low	Not observed. Closest known occurrence is located 4 miles away and suitable habitat present. However, 2017 results were negative.
Loeflingia squarrosa var. *artemisiarum* sagebrush loeflingia	US: – CA: – CRPR: 2B.2	Low	Not observed. Closest known occurrence is located 1 mile away and suitable habitat present. However, 2017 results were negative.

Species	Status	Potential to Occur	Explanation
Navarretia setiloba *Piute Mountains navarretia*	US: – CA: – CRPR: 1B.1	Low	Not observed. Species was detectable at time of focused survey based on reference population checks.
Phacelia nashiana Charlotte's phacelia	US: – CA: – CRPR: 1B.2	Low	Suitable habitat is present throughout the Gen-Tie Study Area in habitats with sandy soils; however, the nearest populations have been documented approximately 11 miles to the north.
Puccinellia simplex California alkali grass	US: – CA: – CRPR: 1B.2	Low	Not observed. Closest known occurrence is located 11 miles away on Edwards AFB. This species occurs on moist alkaline soils on alkali flats and around alkaline vernal pools (Twisselmann, 1995), which is not present in the study area.
Saltugilia latimeri *Latimer's woodland-gilia*	US: – CA: – CRPR: 1B.2	Low	Not observed. Closest known occurrence is located 7 miles away and suitable habitat present. However, 2017 results were negative.
Senna covesii *Coves' cassia*	US: – CA: – CRPR: 2B.2	Low	Not observed. Closest known occurrence is located 17 miles away on Edwards AFB.

US: Federal Designations
E: Federally listed, endangered

CA: State Designations
E: State-listed, endangered

California Rare Plant Rank (CRPR) designations (CDFW, 2018b):
1A. Presumed extirpated in California and either rare or extinct elsewhere
1B. Rare or Endangered in California and elsewhere
2A. Presumed extirpated in California, but more common elsewhere
2B. Rare or Endangered in California, but more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

CRPR extension meanings (i.e., Threat Ranks) (CDFW, 2018b):
1 Seriously endangered in California (over 80 percent of occurrences threatened or have high degree and immediacy of threat).
2 Fairly endangered in California (20–80 percent occurrences threatened).

Mojave spineflower has suitable habitat in the allscale scrub communities east of SR 14 within the Gen-Tie Study Area. This species was not observed during surveys of the Gen-Tie Study Area. While there are multiple known populations within 2 miles, it has been determined that this species has a low potential to occur because, if present, the species would have been detectable during the focused special-status plant survey (Dudek 2017).

Special-Status Wildlife

Table 3.5-8 lists the potential for special-status wildlife species to occur at the Gen-Tie Study Area and an explanation of how that level of potential was determined. Species with a moderate or higher potential to occur, (except for Mohave ground squirrel, which has a low potential to occur), are discussed in more detail. Special-status wildlife species that occur in the region but that are not expected to occur in the study area, due for example, to a lack of suitable habitat, for example, are included in Appendix B4. These species are not discussed further because no significant direct, indirect, or cumulative impacts are expected to result from the proposed project.

TABLE 3.5-8
SPECIAL-STATUS WILDLIFE SPECIES POTENTIAL TO OCCUR IN THE GEN-TIE STUDY AREA

Species	Status	Potential to Occur	Explanation
REPTILES			
Anniella pulchra northern California legless lizard	US: – CA: SSC	Low	Not observed, and unlikely to be detected incidentally during surveys for other resources. Low potential to occur in most of the Gen-Tie Study Area, as the study area is at the edge of the species range. However, this species was observed 1.0 mile south of East–West Route (Options A and B) during surveys for the Mojave West Solar Project (County, 2014).
Gopherus agassizii desert tortoise	US: T CA: T	Present	Scat (year old) and burrow showing recent sign of use north of Trotter Avenue and just east of North–South Route Option 1, during surveys in spring 2017 (see Figure 3-2 in Appendix B4). Although not observed elsewhere, high to moderate potential to occur. Additional CNDDB occurrences are from as near as 0.3 miles from the Gen-Tie Study Area (CDFW, 2017).
BIRDS			
Aquila chrysaetos golden eagle	US: BGEPA, BCC CA: FP	Low (Nesting) Moderate (Wintering and Dispersal)	Not observed. The nearest CNDDB occurrence is approximately 2.3 miles from Option 2 (1.8 miles southwest of the intersection of SR 14 and Silver Queen Road), although the location is not known to have been occupied since 1969 (CDFW, 2017). The next nearest occurrence is from 9.0 miles north of East–West Options (A and B). Generally expected to nest in the Tehachapi Mountains, to the north and west, and potentially occur in the vicinity in winter and during dispersal.
Athene cunicularia burrowing owl	US: BCC CA: SSC	Moderate	Not observed, but focused surveys were not conducted. Although not seen in the Gen-Tie Study Area, individuals were observed at 3 different locations between approximately 0.5 and 1.0 mile from North–South Route Option 1 during surveys. The nearest CNDDB occurrence is from within 0.5 miles of both Option 2 and the main East–West route, near United Street and Purdy Avenue. Suitable habitat is present in much of the Gen-Tie Study Area.
Buteo regalis ferruginous hawk	US: BCC CA: WL	Moderate (Wintering and Migration)	Surveys were not conducted at an appropriate time to detect this species. Moderate potential to occur on occasion during winter or migration. The nearest CNNDB occurrence is from approximately 6.8 miles to the south–southwest.
Buteo swainsoni Swainson's hawk	US: BCC CA: T	Low (Nesting) Present (Dispersal and Migration)	Not expected to nest in the vicinity and nesting not observed during surveys. Observed once, in April 2017, over the main East–West Option Route, during migration. The nearest CNDDB occurrences are 6.8 and 7.2 miles south–southwest (CDFW, 2017).
Falco mexicanus prairie falcon	US: BCC CA: WL	Moderate (Foraging)	Not observed and not expected to nest. Moderate potential to forage during the nesting season. Suitable nesting habitat likely occurs at Soledad Mountain. CNDDB does not provide specific locations for occurrences of this species.
Lanius ludovicianus loggerhead shrike	US: BCC CA: SSC	Present	Observed along the main East–West Option (Options A and B), along North–South Route Option 1 (including and active nest), and regularly in the vicinity. Extensive suitable habitat is present in Joshua tree woodland.
Spinus lawrencei Lawrence's goldfinch	US: BCC CA: –	Moderate (Nesting)	Not observed. Moderate potential to occur, especially near existing development.

Species	Status	Potential to Occur	Explanation
Toxostoma lecontei Le Conte's thrasher	US: BCC CA: SSC	Present	Observed along North–South Option 1 and along the main East–West Route (Options A and B) during surveys. Also observed generally in Joshua tree woodland and other desert scrub communities in the vicinity during Swainson's hawk surveys.
MAMMALS			
Antrozous pallidus pallid bat	US: – CA: SSC	High (Foraging)	Not expected to roost, but high potential to forage. Although CNDDB includes no occurrences in the area, the species recorded during surveys of Soledad Mountain, southwest of the intersection of SR 14 and Silver Queen Road, in 1990 and 1996 (Brown-Berry, 2007). Bats roosting in this area or in nearby human-made structures potentially forage over the Gen-Tie Study Area.
Corynorhinus townsendii Townsend's big-eared bat	US: – CA: SSC	High (Foraging Only)	Not expected to roost, but high potential to forage. The species has been detected roosting in abandoned mine shafts within approximately 0.6 mile of North–South Gen-Tie Route Option 3, as recently as 2006 (CDFW, 2017; Brown-Berry, 2007).
Euderma maculatum spotted bat	US: – CA: SSC	Low (Low Foraging)	Not expected to roost and low potential to forage. CNDDB includes no occurrences in the area, but the Gen-Tie Study Area is within the range of the species. Suitable roosting habitat likely occurs nearby, such as at Soledad Mountain southwest of - SR 14 and Silver Queen Road, and suitable foraging habitat is present in the Gen-Tie Study Area.
Perognathus alticolus inexpectatus Tehachapi pocket mouse	US: – CA: SSC	Moderate	The nearest CNDDB occurrences are three occurrences between 1.8 and 2.2 miles north of East–West (Options A and B). Except for the extreme westernmost areas, which are nearest the Tehachapi foothills, most of the Gen-Tie Study Area is farther east and below the expected elevation of this species. Therefore, it is unlikely to occur in any of the north-south gen-tie route options. Suitable habitat occurs where the East–West options are nearest the known range, but this species has only a low potential to occur here.
Taxidea taxus American badger	US: – CA: SSC	Present	Observed during Swainson's hawk surveys approximately 3.5 miles west southwest of East–West (Options A and B). High potential to occur. CNDDB includes an occurrence approximately 5.7 miles north of East–West (Options A and B), and suitable habitat is widespread in the vicinity.
Vulpes macrotis arsipus desert kit fox	US: – CA: FBM	Present	A natal den and an additional burrow with sign were observed along North–South Gen-Tie Route Option 1 in the spring 2017. Suitable habitat is present elsewhere.
Xerospermophilus mohavensis Mohave ground squirrel	US: – CA: T	Low	Numerous surveys in the vicinity of the gen-tie line show an absence of this species (Leitner, 2015). The lack of occurrence records in and near the gen-tie support the conclusion that there is a low potential for species to occur along the gen-tie (Leitner, 2008, 2015).

Federally and State Listed Species

Desert tortoise was not directly observed during focused protocol-level surveys of the Gen-Tie Study Area. However, sign of desert tortoise was observed twice along North–South Gen-Tie Route Option 1, near the southern end of the route. During surveys in spring 2017, biologists observed a

desert tortoise burrow with sign of recent use, including tracks, and observed older scat at a separate location. Suitable habitat is present over much of the study area.

Swainson's hawk protocol surveys (CEC and CDFG, 2010) were conducted within the Gen-Tie Study Area. Although suitable nesting habitat was observed widely across the Swainson's hawk survey area, no Swainson's hawk nests and no evidence of Swainson's hawk nesting were observed. Swainson's hawks were observed on two occasions, and different locations, during surveys; however, the individuals were determined to be transient in the area either as a migrant or during dispersal.

A Mohave ground squirrel habitat assessment for the species was conducted that covered all gen-tie options. Low- and moderate-quality suitable habitat was observed throughout this area (Brylski, 2018b). However, Mohave ground squirrel is not known to occur west of SR 14 in the vicinity of the Gen-Tie Study Area (Leitner, 2008; Leitner, 2015). The closest CNDDB identification of individuals of this species is approximately 5 miles away in 1987 (CDFW, 2018a). A comprehensive study of squirrel occurrences from 2008 to 2012 (Leitner, 2015) shows the closest occurrences to be approximately 9 miles to the east and the southwest. The most likely route options for the gen-tie line also traverse land already disturbed with roads, wind turbines, and existing solar fields. Areas where the gen-tie crosses less disturbed land are west of SR 14, where numerous studies show an absence of this species.

Other Special-Status Species

Golden eagle was not observed during surveys of the Gen-Tie Study Area. Focused surveys were not conducted, although it's likely the species would have been detected during surveys, particularly during Swainson's hawk surveys, if present within 5 miles of the study area. The CNDDB includes an occurrence mapped generally in the Soledad Mountain area, approximately 2.3 miles from Option 2; however, this territory was last known to be occupied in 1969. Currently, an open-pit heap-leach gold and silver mine operation occupies the north slope of Soledad Mountain, between all gen-tie route options and any remaining suitable nesting habitat in the area. The next nearest occurrences are from the Tehachapi Mountains (CDFW, 2017).

Burrowing owl focused surveys were not conducted in the Gen-Tie Study Area, although the species is typically detectable during the morning hours, when many surveys took place. No burrowing owls were detected in the Gen-Tie Study Area during surveys, although several were detected within1 mile of North–South Route Option 1, and CNDDB includes an occurrence within approximately 0.5 mile of North–South Route Option 2, near the intersection of United Street and Purdy Avenue. Suitable habitat is present in much of the Gen-Tie Study Area.

Ferruginous hawk was not observed during surveys of the Gen-Tie Study Area, but surveys were not conducted at an appropriate time of year for detecting ferruginous hawks. CNDDB includes several occurrences in the vicinity, but this database greatly underrepresents reports of this species. Garrett and Dunn (1981) considered the Antelope Valley to be an important wintering area for the species in California, although most likely winter closer to agricultural areas, which are absent near the study area, and grasslands, which are sparse.

The **Le Conte's thrasher (*Toxostoma lecontei*)** is a resident in low to middle elevations in the deserts of eastern California and within a limited, disjunct range in the western San Joaquin Valley and adjacent smaller valley, from southwestern Fresno County southward (Grinnell and Miller, 1944; Fitton, 2008). They occur in open scrub habitats, usually with sandy soils or in alkaline terrain, including desert washes, creosote scrub, alkali desert scrub, desert succulent scrub, Joshua tree habitats, and (in the San Joaquin Valley) saltbush scrub (Grinnell and Miller, 1944; Fitton, 2008). They feed mostly on a variety of insects and arthropods, but also on lizards and other small vertebrates. Le Conte's thrashers were observed regularly in the Gen-Tie Study Area within desert scrub habitats with scattered Joshua trees during surveys, including along the main East–West Gen-Tie Route Option and North–South Gen-Tie Route Option 1. Suitable habitat also occurs within or near North–South Option 2.

The **Lawrence's goldfinch (*Spinus lawrencei*)** is locally common along the western edge of the southern deserts, from Santa Clara and Monterey Counties south through coastal slopes, and occasionally surrounding the foothills of the Central Valley (Zeiner et al., 1990). The Lawrence's goldfinch prefers valley foothill woodlands and hardwood conifer forests, Southern California desert riparian, palm oasis, pinyon–juniper, and lower montane areas. This species was not observed during surveys. It is relatively unlikely to nest in most of the Gen-Tie Study Area, although it has moderate potential to nest near existing development, such as occurs near portions of the North–South Gen- Tie Route Options 1 and 2, where they may be attracted to moister areas around exotic plantings.

Loggerhead shrike was observed in several locations within the Gen-Tie Study Area, including along the main East–West Gen-Tie Route Option (where an adult was observed with a juvenile west of SR 14), along the northern portion of North–South Gen-Tie Route Option 1 (a family group near a nest structure), and regularly in the vicinity. Extensive suitable habitat, particularly in Joshua tree woodland, is present in the study area.

Prairie falcon was not observed in the Gen-Tie Study Area. Although focused surveys for this species were not conducted, it's likely it would have been detected during Swainson's hawk surveys, if nesting within 5 miles of the study area. Nesting habitat is absent in the Gen-Tie Study Area, although suitable nesting sites likely occur nearby in the Soledad Mountain area, near North–South Gen-Tie Route Option; however, current gold and silver mining operations on the north slope of the mountain limit the likelihood of the species nesting there. Prairie falcons does have the potential to forage in the Gen-Tie Study Area, especially during the non-nesting season.

The **pallid bat (*Antrozous pallidus*)** occurs throughout California, except at the highest elevations of the Sierra Nevada range. Although this species prefers rocky outcrops, cliffs, and crevices with access to open communities and land covers for foraging, it has been observed far from such areas (Hermanson and O'Shea, 1983). Foraging habitats for pallid bats are varied and include grasslands, oak savannahs and woodlands, riparian woodland, open pine forests, talus slopes, desert scrub, and agricultural areas. Focused surveys were not conducted for bats in the survey area. However, pallid bats have detected at Soledad Mountain, within 2.0 miles of North–South Gen-Tie Route Option 2.

The **Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)** is an SSC that occurs from the Tehachapi Pass area (northwest of Mojave) southwest to the Mount Pinos area on the boundary of Kern and Ventura Counties and the Lake Hughes area in northern Los Angeles County. It apparently is associated with arid annual grassland and desert scrub communities (Williams, 1986). Known occurrences are mostly above 3,400 feet above mean sea level (amsl). The CNDDB includes three occurrences between 1.8 and 2.2 miles north of East–West Gen-Tie Route (Options A and B). Except for the extreme westernmost areas, which are nearest the Tehachapi foothills, most of the study area is farther east and below the expected elevation of this species. Therefore, it is unlikely to occur in any of the north-south gen-tie route options. Suitable habitat occurs where the East–West options are nearest the known range, but the species has a low potential to occur here.

American badger was not observed in the Gen-Tie Study Area; however, a single badger was observed at burrow entrance approximately 3.5 miles west southwest of East–West Gen-Tie Route Options A and B in April 2017, and CNDDB includes an occurrence approximately 5.7 miles north of East–West Gen-Tie Route Options A and B. Suitable habitat for the species is present throughout the Gen-Tie Study Area.

Desert kit fox was observed once in the Gen-Tie Study Area, when an active natal den was observed along North–South Gen-Tie Option 1 in the spring 2017. Desert kit fox sign (tracks) was observed around a suitable burrow at one other location along Option 1 in the spring 2017. Desert kit fox have a high potential to occur elsewhere in the Gen-Tie Study Area, particularly within the East–West Gen-Tie Route.

Sensitive Habitats

No critical habitat for federally or state listed (endangered or threatened) species is present within the Gen-Tie Study Area.

The Gen-Tie Study Area is located east of the Tehachapi Mountains and south of Sugarloaf Mountain and is relatively flat, gradually sloping downward from the northwest to the southeast. Rogers Lake, a closed drainage basin, together with the adjacent smaller Rosamond and Buckthorn Lake, make up the largest water feature in the study area vicinity. Drainages within the Gen-Tie Study Area originate from flows from the Tehachapi and Sugarloaf Mountains, road runoff, or sheet-flow, and either dissipate into the desert floor evaporating or infiltrating into the groundwater basin or continue to flow to Rogers Lake during larger storm events. The results of the jurisdictional delineation concluded there are non-wetland state-jurisdictional waters within the study area.

Approximately 2.16 acres (14,614 linear feet) of waters of the state occur within the study area. CDFW- and RWQCB-jurisdictional areas present include ephemeral stream channels and swales. **Table 3.5-9** includes the acres and linear feet of CDFW- and RWQCB jurisdictional non-wetland waters within the study area and also includes the periodicity of the non-wetland waters of the state on site (i.e., ephemeral or intermittent).

A total of 10 features were recorded within the East–West Gen-Tie Route (Options A and B) totaling approximately 1.78 acres (10,630 linear feet) of CDFW- and RWQCB-jurisdictional non-

wetland waters. The drainages tend to follow the existing topography and flow from northwest to southeast. All drainage boundaries were demarcated based on the presence of fluvial and erosion indicators, including change in vegetation cover, break in bank slope, drift and/or debris, surface relief/ drainage swale, sediment sorting, debris wracking, and scour. None contained hydrophytic vegetation or hydric soils.

A total of two features were recorded within the North–South Option 1 Route totaling approximately 0.27 acres (2,161 linear feet) of CDFW- and RWQCB-jurisdictional non-wetland waters. The two drainages follow the existing topography and flow from northwest to southeast and north to southeast. These features were swale-like exhibiting surface relief and contained hydrology indicators such as mudcracks, drift and/or debris, and wracking. None contained hydrophytic vegetation or hydric soils.

TABLE 3.5-9
JURISDICTIONAL WATERS OF THE STATE IN THE STUDY AREA

	East–West Gen-Tie Route		North–South Gen-Tie Option 1		North–South Gen-Tie Option 2		Total	
Jurisdiction	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**
Non-wetland Waters of the State (RWQCB/ CDFW) – Ephemeral	1.78	10,630	0.27	2,161	<0.01	12	2.05	12,803

One feature was recorded within the North–South Option 2 Route totaling approximately <0.01 acre (12 linear foot) of CDFW- and RWQCB-jurisdictional non-wetland waters. This drainage swale follows the existing topography, flowing northwest to southeast, and was recorded immediately adjacent to United Street, which has cut off connectivity. A culvert is located on the west/east sides of United Street; however, grading has appeared to cut off access, and these culverts are almost completely clogged by soil and vegetation. This feature did not contain hydrophytic vegetation or hydric soils.

No valley needlegrass grasslands or wildflower fields are present within the Gen-Tie Study Area. Joshua tree woodlands are present in the Gen-Tie Study Area. This community primarily occurs in the northwestern portion of the Gen-Tie Study Area, near the Windhub Substation.

Wildlife Movement Corridors

The study area is largely undeveloped with an open landscape and thus wildlife can move freely throughout the area. In addition, wildlife can utilize dirt roads within the study area can act to move throughout the area. Constraints to wildlife movement include SR 14, Oak Creek Road, several other paved roads, an existing substation, wind turbines, the Southern Pacific Railroad, and scattered rural residential areas. While these features may constrain wildlife movement, the low traffic volume, along with light human presence, likely does not preclude wildlife from utilizing the study area and surrounding areas.

3.5.2.2 Assessment Methods/Methodology

Biological resources that are addressed in this section of the EIS/EIR include those identified in Section 3.5.1, *Environmental Setting*, as being present in the Local Setting for the EUL and Gen-Tie Study Areas. Section 3.5.4, *Cumulative Impact Analysis*, addresses those resources identified in the larger Regional Setting.

This section of the EIS/EIR presents the impact significance criteria that were used for analysis, followed by a discussion of impacts. Under each alternative, the NEPA discussion of impacts is presented in the following order:

- Construction
- Operations and Maintenance
- Decommissioning

Within each of these sections, the following resources are included, as discussed in the Local Setting sections of this document:

- General vegetation communities and wildlife
- Special-status plants identified as having a moderate or better potential to occur in the project study areas are denoted with an "X," as shown below:

Species (common name)	EUL Study Area	Gen-Tie Study Area
Alkali mariposa lily	X	—
Mojave spineflower	X	—
Desert cymopterus	X	—
Recurved larkspur	X	—
Barstow woolly sunflower	X	—
Sagebrush loeflingia	X	—

- Special-status wildlife identified as having a moderate or better potential to occur in the project study areas are denoted with an "X," as shown below (those in **bold** are federally and/or state listed endangered and/or threatened species). The portion of the species life history that is considered sensitive is noted if applicable.

Common Name (Sensitive Portion of Life History)	EUL Study Area	Gen-Tie Study Area
Desert tortoise	**X**	**X**
Golden eagle (nesting and wintering)	X	X
Short-eared owl (nesting)	X	—
Burrowing owl (burrow site and some wintering sites)	X	X
Ferruginous hawk (wintering)	X	X
Swainson's hawk (nesting)	—	—
Mountain plover (wintering)	—	—
Northern harrier (nesting)	—	—
Prairie falcon (nesting)	—	—

Common Name (Sensitive Portion of Life History)	EUL Study Area	Gen-Tie Study Area
Loggerhead shrike (nesting)	X	X
Lawrence's goldfinch (nesting)	—	X
Le Conte's thrasher (nesting)	X	X
Townsend's big-eared bat	X	X
Tehachapi pocket mouse	—	—
American badger	X	X
Desert kit fox	X	X
Mohave ground squirrel	—	—

- Sensitive habitats, as shown below:

Sensitive Habitat	EUL Study Area	Gen-Tie Study Area
Jurisdictional waters of the state	X	X
Joshua tree woodlands	X	X

- Wildlife Movement Corridors, which are present in both the EUL and Gen-Tie Study Areas

In each subsection, direct impacts are presented followed by indirect impacts, and then gen-tie impacts where they may differ from those in the EUL Study Area. After each discussion of a potentially significant impact, the mitigation measures that relate to that impact are presented, followed by a determination of the level of significance after mitigation.

Following the discussion of NEPA potentially significant impact criteria, a section on the CEQA significance criteria is presented and each discussion of a potentially significant impact is related to either the pertinent discussion under the NEPA impact discussion or the mitigation measures that relate to that impact are presented, followed by a determination of the level of significance after mitigation.

Mitigation measures themselves are described in detail in Section 3.5.5, *Mitigation Measures*. Section 3.5.4, *Cumulative Impact Analysis*, describes cumulative impacts, and Section 3.5.6, *Residual Impacts After Mitigation*, identifies residual impacts after implementation of the mitigation measures. Mitigation measures have been separated into two groups; one group that applies to the solar facility portion of the project site and one group that applies to the gen-tie portion of the project site. This is indicated by either a lowercase 'a' for the solar facility or a lowercase 'b' for the gen-tie at the end of the mitigation measure number.

3.5.2.3 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant related to biological resources if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

NEPA

The following criteria were used to determine the severity and intensity of impacts under NEPA:

1. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
2. The degree to which the Proposed Action and alternatives affects local and regional populations of non-sensitive biological resources, and special-status species and habitats. While a smaller adverse effect to a special-status species (or any adverse effect to a listed species) may be considered significant, these effects would need to be very large to have adverse effects on regional non-sensitive resources.
3. Whether an action significantly affects unique characteristics of the geographic area such as proximity to critical habitats, special-status habitats, or other ecologically critical areas.
4. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
5. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

CEQA/Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in Appendix G of the CEQA Guidelines, to determine if a project could potentially have a significant adverse effect regarding biological resources.

A project would have a significant adverse effect on biological resources if it would:

1. Have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.
2. Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.
3. Have a substantial adverse impact on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted habitat conservation plan, natural Community conservation plan, or other approved local, regional, or state habitat conservation plan.

3.5.3 Impacts and Mitigation Measures

3.5.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

This discussion of Alternative A is specific to the construction, operation and maintenance, and decommissioning of the solar arrays and related components that would be constructed within the EUL Study Area as well as the gen-tie line options associated with Alternative A. Mitigation measures identified here are presented in Section 3.5.5, *Mitigation Measures*.

NEPA: Environmental Impacts

Construction

General Vegetation and Wildlife

The applicant plans to implement the "mow and roll" technique of site preparation, which allows for a significant reduction in the extent of rough grading and related dust control needs. Instead of conducting vegetation clearing and mass grading across the whole site, limited grading necessary to establish construction staging areas; site access roads; inverter pads; utility trenches; building pads for onsite substation, switchyards and the operation and maintenance (O&M) building; and discreet areas where leveling may be needed for pile installation would be conducted. In order to access locations for vibratory piles placed for solar racking, vegetation would be mowed, leaving root wads intact and rolled over only to the extent necessary for construction equipment to access the construction site area.

Construction of the solar array within the EUL Study Area would require the potential disturbance of up to 4,000 acres as described above. Similar construction practices would be employed along the gen-tie line with a potential disturbance area of 150 acres (acreage based on assumed 14.3 to 15.9-mile length and 100 ft width for gen-tie right of way). This would result in the direct impact of disturbance of a maximum of 4,150 acres of general (non-sensitive) vegetation and wildlife resources. Those species that have smaller home ranges or are less mobile are more likely to experience direct impacts. However, because an abundance of similar and less disturbed habitats are present in the larger regional setting, significant impacts are not expected. No mitigation is required.

Construction of Alternative A also has the potential for indirect impacts to general vegetation and wildlife resources, including impacts from the introduction or increasing of the presence of non-native plant species (including weeds), and from the introduction or increasing of the presence of predators such as common ravens, domestic dogs, and coyotes. This is a particular issue if blowing dust creates habitat for the introduction of Russian thistle and other non-native species, and particularly within those areas of the EUL Study Area that have burned in the past decade. These impacts would be considered significant if these introductions or increases were so great as to alter the native composition of the local or regional setting areas. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-5a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b and MM 3.5-2b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Construction noise, dust, and lighting may also indirectly impact general wildlife species. However, these impacts are likely to be less than significant for general wildlife species as they are not likely

to affect very large numbers of individuals or alter the local or regional species composition. No mitigation is required.

Special-Status Plants

Construction of Alternative A has the potential to directly impact special-status plant species through the removal of these plants during site preparation and other construction activities. If endangered or other special-status plants are present within the area covered by the Proposed Action and would be removed, these impacts would be considered significant. As described previously, implementation of Mitigation Measures MM 3.5-1a and MM 3.5-1b (Biological Monitoring), MM 3.5-3a and MM 3.5-2b (Worker Environmental Awareness Program), MM 3.5-4a (Vegetation Salvage and Management Plan), and MM 3.5-5a (Weed Management), would reduce these impacts to a less-than-significant level.

Construction of Alternative A has the potential for removal of alkali mariposa lily and Mojave spineflower, known to occur in the EUL Study Area, as shown in **Table 3.5-10**, and other special-status plants with a moderate or high potential to occur (i.e., desert cymopterus, recurved larkspur, Barstow woolly sunflower, and sagebrush loeflingia).

Potential disturbance to Mojave spineflower, a CRPR List 4.2 species, and its suitable habitat is considered less than significant. CRPR List 4 species are of limited distribution or infrequent throughout a broader area in California, but their vulnerability or susceptibility to threat is currently low. From a statewide perspective, this species is not considered rare (CDFW, 2018b). It is considered locally common off base (EAFB, 2008) and on base, in 2015, it was abundant between the western edge of Rosamond Dry Lake and the installation boundary (EAFB, 2017). Based on the CNPS Inventory of Rare and Endangered Plants, Mojave spineflower is widespread throughout the Antelope Valley (CNPS, 2018). Given Mojave spineflower is not rare from a statewide perspective nor is it locally rare, direct impacts are considered less than significant.

The removal of individual alkali mariposa lilies and suitable habitat for the species as well as direct impacts to other special-status species with a moderate or high potential to occur (i.e., desert cymopterus, recurved larkspur, Barstow woolly sunflower, and sagebrush loeflingia), would be considered significant.

TABLE 3.5-10
ACREAGES OF KNOWN AND POTENTIAL HABITAT FOR ALKALI MARIPOSA LILY IN ALTERNATIVE A AND ALTERNATIVE B

Species/Habitat Type	Alternative A	Alternative B
Alkali mariposa lily		
Known habitat	3	0
Suitable habitat	129	36

Construction of Alternative A also has the potential to indirectly impact special-status plant species, including alkali mariposa lily and Mojave spineflower, by degrading habitats on and adjacent to Alternative A and by introducing or increasing the presence of non-native plant species (including weeds). As described above, because Mojave spineflower is not rare from a statewide perspective

nor is it locally rare, indirect impacts are considered less than significant. Impacts to special-status plants would be considered significant if the increase in weeds was so great as to drastically alter the native composition of the local or regional setting areas. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-5a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b and MM 3.5-2b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Special-Status Wildlife

Construction of Alternative A has the potential to directly impact special-status wildlife species, such as the federally and state-threatened desert tortoise and the state-threatened Swainson's hawk (during migration and dispersal). Direct impacts could occur from mortality or injury to these species during construction activities (i.e., vehicle collisions, bird collisions with project infrastructure). If they occur, these impacts would be considered significant. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-6a, MM 3.6-7a, MM 3.6-8a, MM 3.5-9a, MM 3.5-11a, and MM 3.5-12a for the solar facility portion of the project, and Mitigation Measures 3.5-1b, MM 3.5-2b, MM 3.5-5b, MM 3.5-6b, MM 3.5-7b, MM 3.5-8b, MM 3.5-9b, MM 3.5-10b, and MM 3.5-11b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level. In particular, it is noted that MM 3.5-8a and MM 3.5-8b require that any desert tortoise within the project footprint shall be relocated by an authorized biologist and that fencing shall be erected to prevent desert tortoises from entering the site during construction in accordance with its Biological Opinion and prior to commencement of construction.

Construction of Alternative A also has the potential to indirectly impact special-status wildlife, including those from the introduction or increasing of the presence of non-native plant species (including weeds), and from the introduction or increasing of the presence of predators such as common ravens, domestic dogs, and coyotes. These impacts would be considered significant. Implementation of MM 3.4-5a (Weed Management) and MM 3.5-6a for the solar facility portion of the project as well as Mitigation Measure 3.5-5b (Raven Management Plan) for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Construction noise, dust and lighting may also indirectly impact special-status wildlife species. These impacts would be considered significant for special-status wildlife species even though they are not likely to affect very large numbers of individuals as these species have special protections, particularly the listed species. Implementation of Mitigation Measures MM 3.5-1a and MM 3.5-2a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b and MM 3.5-3b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Sensitive Habitats

Construction of Alternative A may result in direct impacts to sensitive habitats by the potential filling and/or removal of waters that fall under the jurisdiction of the state Streambed Alteration program (Fish and Game Code 1602), or RWQCB. However, it is anticipated that such resources can be avoided. A jurisdictional delineation has been conducted on 3,032 acres of the 4,000-acre Alternative A (Dudek, 2018b) and a map-based analysis was conducted for potential for waters of the state to occur in the remainder of the EUL Study Area. In the 3,032-acre portion of the EUL Study Area where a formal jurisdictional delineation was completed, there are approximately 9.4

acres of ephemeral, non-vegetated swales under the jurisdiction of CDFW and RWQCB. Additionally, in the area where the map-based analysis was performed, a pre-project jurisdictional delineation would determine the precise location and extent of any additional jurisdictional resources, and where they can be avoided or impacts reduced. If relevant, impacts to jurisdictional resources that cannot be avoided would be considered adverse but minimal (less than 1 acre). As discussed in Section 3.5.1.2, an approved jurisdictional determination was issued by USACE for the Sunlight Partners Solar Array Project on June 7, 2013 (USACE, 2013). USACE determined that potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not USACE-jurisdictional. The review area included the Antelope Valley Watershed. This review area encompasses the proposed solar facility site and gen-tie line options. Therefore, the proposed solar facility site and gen-tie line options are located in an area determined to not be under the jurisdiction of USACE and would, therefore, not require a Section 404 permit. However, the project may result in the filling and/or removal of waters jurisdictional to the State Streambed Alternation program or RWQCB. These impacts would be significant without mitigation. Implementation of Mitigation Measures MM 3.5-1a and 3.5-3a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b, MM 3.5-2b, and MM 3.5-13b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Construction of Alternative A, including the gen-tie, would result in the removal of Joshua tree woodlands. This impact may be significant because regional plans that are applicable to the gen-tie line area contain policies that protect Joshua Trees. Joshua tree woodlands are considered a sensitive natural community. However, within the entire range of the community, it is considered uncommon but not rare (global rank of G4). Joshua tree woodlands are also relatively abundant on Edwards AFB (47,382 acres). Because Joshua tree woodlands are considered sensitive natural communities by Kern County, for the purposes of the draft EIS/EIR, impacts to Joshua tree woodland are considered significant.

Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-13a for the solar facility portion of the project as well as Mitigation Measures MM 3.5-1b, MM 3.5-2b, MM 3.5-14b, and MM 3.5-15b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Wildlife Movement Corridors

Potential direct and indirect impacts to wildlife movement corridors are not likely to be significant because there are no major wildlife corridors within the region. Although wildlife movement and dispersal likely occurs on a regional and local scale, abundant adjacent lands would remain available for wildlife movement. Potential direct and indirect impacts to wildlife movement corridors from construction of the gen-tie are not likely to be significant because although these resources may be present within the gen-tie area, the construction of the gen-tie line would not restrict wildlife movement and abundant adjacent lands would remain available for wildlife movement. No mitigation is required.

Operations and Maintenance

General Vegetation and Wildlife

Once the project is constructed, no significant additional direct loss or disturbance of vegetation would occur. As a result, the operation and maintenance of Alternative A is unlikely to directly affect general vegetation resources but could directly impact general wildlife through injury and mortality related to collisions with vehicles and project infrastructure. With the special exception of birds (discussed separately below) these impacts are not considered significant as an abundance of similar resources are present in the larger regional setting. No mitigation is required.

The operation and maintenance of Alternative A has the potential to indirectly impact general vegetation and wildlife resources, including those from the introduction or increasing of the presence of non-native plant species (including weeds), and from the introduction or increasing of the presence of predators such as common ravens, domestic dogs, and coyotes. These impacts would be considered significant if these introductions or increases were so great as to alter the native composition of the local and regional setting areas. Implementation Mitigation Measures MM 3.5-3a, MM 3.5-4a, and MM 3.5-6a for the solar facility portion of the project, and Mitigation Measures MM 3.5-2b and MM 3.5-5b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Of particular concern is the potential for indirect impacts to birds from the possibility that they may perceive the solar arrays as water bodies, particularly during migration periods for water birds. Impacts would result either from mortality or injury caused by colliding with panels or other infrastructure, or by birds landing on the site unharmed, but unable to regain flight, eventually perishing from predation or dehydration. If large numbers of birds were affected, these impacts would be considered significant. Implementation of Mitigation Measures MM 3.5-7a and MM 3.5-9a for the solar facility portion of the project, and Mitigation Measures MM 3.5-6b and MM 3.5-7b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level. MM 3.5-7a includes preparation and agency approval of a *Bird Conservation Strategy* (BCS) in which project-specific monitoring, project controls in the event that certain thresholds are met, and other requirements would be identified to address and reduce potential avian mortality. MM. 3.5-6b includes utilizing the standards set forth in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* on generation tie-lines to protect birds from electrocution and collision.

Special-Status Plants

The operation and maintenance of Alternative A is unlikely to substantially directly affect special-status plants. There remains potential to indirectly impact special-status plant species in adjacent areas by introducing or increasing the presence of non-native plant species (including weeds). These impacts would be considered significant if the increase in weeds was so great as to drastically alter the native composition of these areas. Implementation of Mitigation Measures MM 3.5-1a, 3.5-3a, and 3.5-4a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b and MM 3.5-2b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Special-Status Wildlife

The operation and maintenance of Alternative A has the potential to directly impact special-status wildlife species through mortality or injury to these species related to collisions with vehicles and other project infrastructure. These impacts would be considered significant, especially impacts to listed species. Implementation of Mitigation Measures MM 3.5-5a, MM 3.5-7a, MM 3.5-8a, and MM 3.5-9a for the solar facility portion of the site, and Mitigation Measures MM 3.5-6b, MM 3.5-7b, and MM 3.5-8b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

The operation and maintenance of Alternative A also has the potential to indirectly impact special-status wildlife from introduction or increase of the presence of non-native plant species (including weeds), and from the introduction or increase of the presence of predators such as common ravens, domestic dogs, and coyotes, including through the introduction of trash that could attract them to the site. These impacts would be considered significant. Implementation of Mitigation Measures MM 3.5-3a, MM 3.5-5a, MM 3.5-6a, and MM 3.5-8a for the solar facility portion of the project and Mitigation Measures MM 3.5-2b, MM 3.5-5b, and MM 3.5-8b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Sensitive Habitats

The operation and maintenance of Alternative A and the gen-tie line is unlikely to result in significant direct or indirect impacts to sensitive habitats. No mitigation is required.

Decommissioning

General Vegetation and Wildlife

At the time the facility is decommissioned in approximately 35 years, the EUL site could be converted to other uses or it could be revegetated to a natural state. New direct impacts would occur if the vegetation on the site has reestablished itself in the disturbed areas. Impacts from any changes to the project site would be purely speculative and will be addressed at that time through the completion of additional NEPA and CEQA analysis or in accordance with applicable regulations in effect at that time.

However, and in general, the decommissioning of Alternative A may remove vegetation and wildlife resources within the gen-tie line route right-of-way that may reestablish after the anticipated 35-year period of operation. This impact is not likely to be considered significant as an abundance of similar and less-disturbed habitats would likely remain present in the larger regional setting.

The decommissioning of Alternative A also has the potential to indirectly impact general vegetation and wildlife resources, from the introduction or increase of the presence of non-native plant species (including weeds), and from the introduction or increase of the presence of predators such as common ravens, domestic dogs, and coyotes. These impacts would be considered significant if these introductions or increases were so great as to alter the native composition of the local or regional setting areas. Implementation of Mitigation Measures MM 3.5-5a and MM 3.5-6a for the solar facility portion of the project, and Mitigation Measure MM 3.5-5b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

The decommissioning noise, dust, and lighting may also indirectly impact general wildlife species. These impacts are likely to be less than significant for general wildlife species as they are not likely to affect very large numbers of individuals or alter the local or regional species composition.

Special-Status Plants

If the site is converted to other uses following the decommissioning of Alternative A, special-status plants may be directly or indirectly affected if they had re-established on the site, through direct removal of these species, or indirect impacts related to introducing or increasing the presence of non-native plant species (including weeds). These impacts would be considered significant if listed species were affected or if the increase in weeds was so great as to drastically alter the native composition of the local or regional setting areas. Mitigation measures related to these impacts include Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-5a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b and MM 3.5-2b for the gen-tie portion of the project. Implementation of these measures would reduce impacts to a less-than-significant level.

Special-Status Wildlife

The decommissioning of Alternative A has the potential to directly impact special-status wildlife species through mortality or injury to these species related to collisions with vehicles and other project infrastructure. These impacts would be considered significant, especially those to listed species. Mitigation measures related to these impacts include Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-6a, and MM 3.5-8a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, MM 3.5-5b, and MM 3.5-8b for the gen-tie portion of the project and would reduce these impacts to a less-than-significant level.

The decommissioning of Alternative A also has the potential to indirectly impact special-status wildlife, including those from the introduction or increase of the presence of non-native plant species (including weeds), and from the introduction or increase of the presence of predators such as common ravens, domestic dogs, and coyotes. These impacts would be considered adverse. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-5a, and MM 3.5-6a, for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, and MM 3.5-5b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Sensitive Habitats

The decommissioning of Alternative A may result in direct impacts to sensitive habitats by the filling and/or removal of waters that fall under the jurisdiction of the state Streambed Alteration program (Fish and Game Code 1602), or RWQCB. If impacts to waters of the state cannot be avoided, the remaining impacts to jurisdictional resources would be considered significant. These impacts would be significant without mitigation. Implementation of Mitigation Measure MM 3.5-13b (Jurisdictional Waters Permitting) for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

The decommissioning of Alternative A is unlikely to result in direct or indirect impacts to Joshua tree woodlands. Although some Joshua trees may reestablish on the site, they are unlikely to have

formed a Joshua tree woodland within the 35-year life of the project. Potential beneficial impacts to wildlife movement would result from the removal of the solar arrays.

CEQA: Impact Significance Determination

Impact 3.5-1: The project would have a substantial adverse impact, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.

As discussed in this section of the EIS/EIR under NEPA: Environmental Impacts, the development of Alternative A would result in both direct and indirect impacts to listed and other special-status species in the absence of avoidance, minimization, and mitigation measures. Many of these impacts would be significant prior to mitigation. The removal of Mojave spineflower, a CRPR List 4.2 species, and its suitable habitat, is considered less than significant. CRPR List 4 species are of limited distribution or infrequent throughout a broader area in California, but their vulnerability or susceptibility to threat is currently low. From a statewide perspective, this species is not considered rare (CDFW, 2018b). It is considered locally common off base (EAFB, 2008) and on base, in 2015, it was abundant between the western edge of Rosamond Dry Lake and the installation boundary (EAFB, 2017). Based on the CNPS Inventory of Rare and Endangered Plants, Mojave spineflower is widespread throughout the Antelope Valley (CNPS, 2018). Given Mojave spineflower is not rare from a statewide perspective nor is it locally rare, impacts are considered less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.5-1a through MM 3.5-12a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b through MM 3.5-12b for the gen-tie portion of the project. (see Section 3.5.5).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.5-2: The project would have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.

There is no riparian habitat located within the Alternative A site. Sensitive habitats present include Joshua tree woodlands and wildlife movement corridors, both of which may be directly and indirectly affected by the Proposed Action. Potential direct and indirect impacts to wildlife movement corridors are not considered to be significant. Because Joshua tree woodlands are considered sensitive natural communities, for the purposes of the draft EIS/EIR, impacts to Joshua tree woodland are considered significant.

Mitigation Measures

Implement Mitigation Measures MM 3.5-1a, MM 3.5-3a, 3.5-4a, and 3.5-13a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, MM 3.5-14b, and MM 3.5-15b for the gen-tie portion of the project (see Section 3.5.5).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.5-3: The project would have a substantial adverse impact on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means.

Within the proposed solar facility and gen-tie line, there are no waters of the U.S., including wetlands, defined by Section 404 of the Clean Water Act. The proposed solar facility site and gen-tie line are located in an area that supports resources that are under the jurisdiction of the state Streambed Alteration program (Fish and Game Code 1602) and RWQCB. A jurisdictional delineation has been conducted on 3,032 acres of the 4,000-acre Alternative A (Dudek, 2018b). In the remainder of the 4,000 acres, a map-based analysis was conducted to identify the potential locations of waters of the state. In areas not previously surveyed, a pre-project jurisdictional delineation will be conducted to determine the precise location and extent of any jurisdictional resources, and where they can be avoided or impacts reduced. Remaining impacts to jurisdictional resources, if avoidance is not feasible, would be considered minimal (less than 1 acre) but nonetheless significant; however, Mitigation Measure MM 3.5-13b requires compensatory mitigation for any impacts to jurisdictional resources for the gen-tie portion of the project, if avoidance is not feasible.

Mitigation Measures

Implement Mitigation Measures MM 3.5-1a and MM 3.5-3a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, and MM 3.5-13b for the gen-tie portion of the project (see Section 3.5.5).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.5-4: The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

As discussed above under the Sensitive Habitats discussion, there are not likely to be substantial changes to regional movement patterns of wildlife. The implementation of Alternative A is also not likely to impede the use of any native wildlife nursery sites. Impacts would be less than significant and no mitigation is required.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.5-5: The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

With respect to the Gen-Tie line and without mitigation, the implementation of Alterative A could conflict with the general guidance of the Kern County General Plan to encourage development within urbanized areas, encourage the preservation of Joshua trees and wildflower concentrations, and discourage the development and fragmentation of resource management areas. The following are specific measures of local policies and ordinances from the energy element of the General Plan, and local Specific Plans:

- The County should work closely with local, State, and federal agencies to ensure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.
- The County should develop and implement measures which result in long-term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.
- The County should encourage solar development in the desert and valley regions previously disturbed, and discourage development of energy projects on undisturbed land supporting State or federally protected plant and wildlife species.
- South of Mojave – Elephant Butte Specific Plan (1973) – this plan directs that the removal of native desert vegetation should be limited, and that stands of Joshua trees should be preserved, and that utilities along roadways should be placed underground to protect scenic values.

The project is not likely to impact Joshua trees, but if there is an impact it would be considered significant. However, with the implementation of the mitigation measures listed below, impacts to Joshua Tress would be reduced to a less than significant level.

Mitigation Measures

Implement Mitigation Measures MM 3.5-4a and MM 3.5-13a for the solar facility portion of the project, and Mitigation Measures MM 3.5-14b and MM 3.5-15b for the gen-tie portion of the project (see Section 3.5.5).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.5-6: The project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan and would therefore have no impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No impact.

3.5.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Alternative B would involve construction of solar arrays on approximately one-third of the acreage in the EUL Study Area and construction-related ground disturbance that Alternative A would require to support the full project (reduced from approximately 4,000 to 1,500 acres). Alternative B would utilize the same gen-tie line options route described for Alternative A.

Construction

General Vegetation and Wildlife

The applicant plans to implement the "mow and roll" technique of site preparation, which allows for a significant reduction in the extent of rough grading and related dust control needs. Instead of conducting vegetation clearing and mass grading across the whole site, limited grading necessary to establish construction staging areas; site access roads; inverter pads; utility trenches; building pads for onsite substation, switchyards and the O&M building; and discreet areas where leveling may be needed for pile installation would be conducted. In order to access locations for vibratory piles placed for solar racking, vegetation would be mowed, leaving root wads intact and rolled over only to the extent necessary for construction equipment to access the construction site area.

Construction of the solar array within the EUL Study Area would require the potential disturbance of up to 1,500 acres as described above. Similar construction practices would be employed along the gen-tie line with a potential disturbance area of 150 acres (acreage based on assumed 14.3 to 15.9-mile length and 100 ft width for gen-tie right of way). This would result in the direct impact of disturbance of a maximum of 1,650 acres of general (non-sensitive) vegetation and wildlife resources. Those species that have smaller home ranges or are less mobile are more likely to experience direct impacts. However, because an abundance of similar and less disturbed habitats are present in the larger regional setting, significant impacts are not expected. No mitigation is required. Construction of Alternative B also has the potential for indirect impacts to general vegetation and wildlife resources, including impacts from the introduction or increasing of the presence of non-native plant species (including weeds), and from the introduction or increasing of the presence of predators such as common ravens, domestic dogs, and coyotes. These impacts would likely occur at a lesser extent than identified for Alternative A due to the smaller footprint of Alternative B, but would be considered significant if these introductions or increases were so great as to alter the native composition of the local or regional setting areas. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, MM 3.5-5a, and MM 3.5-6a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, and MM 3.5-5b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Construction noise, dust, and lighting may also indirectly impact general wildlife species. These impacts are likely to be less than significant for general wildlife species as they are not likely to affect very large numbers of individuals or alter the local or regional species composition. No

mitigation is required. However, implementation of Mitigation Measure MM 3.5-2a for the solar facility portion of the project, and Mitigation Measure MM 3.5-3b for the gen-tie portion of the project, would further reduce impacts from noise, dust and lighting.

Special-Status Plants

Construction of Alternative B has the potential to directly impact special-status plant species, through the removal of these plants during site preparation and other construction activities. If special-status plant species are present within the 1,650 acres covered by Alternative B and would be removed, these impacts would be considered significant. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-5a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b and MM 3.5-2b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Construction of Alternative B reduces the potential for removal of alkali mariposa lily and Mojave spineflower, as compared to Alternative A, but may still result in potential impacts to these species and other special-status plants with a moderate or high potential to occur (i.e., desert cymopterus, recurved larkspur, Barstow woolly sunflower, and sagebrush loeflingia).

The removal of Mojave spineflower, a CRPR List 4.2 species, and its suitable habitat under Alternative B is considered less than significant. CRPR List 4 species are of limited distribution or infrequent throughout a broader area in California, but their vulnerability or susceptibility to threat is currently low. From a statewide perspective, this species is not considered rare (CDFW, 2018b). It is considered locally common off base (EAFB, 2008) and on base, in 2015, it was abundant between the western edge of Rosamond Dry Lake and the installation boundary (EAFB, 2017). Based on the CNPS Inventory of Rare and Endangered Plants, Mojave spineflower is widespread through the Antelope Valley (CNPS, 2018). Given Mojave spineflower is not rare from a statewide perspective nor is it locally rare, direct impacts are considered less than significant.

The removal of individual alkali mariposa lilies and suitable habitat for the species as well as direct impacts to other special-status species with a moderate or high potential to occur (i.e., desert cymopterus, recurved larkspur, Barstow woolly sunflower, and sagebrush loeflingia), would be considered significant.

Construction of Alternative B also has the potential to indirectly impact special-status plant species, including alkali mariposa lily and Mojave spineflower by degrading habitats on and adjacent to Alternative B and by introducing or increasing the presence of non-native plant species (including weeds). As described above, because Mojave spineflower is not rare from a statewide perspective nor is it locally rare, indirect impacts are considered less than significant. Impacts to special-status plants would be considered significant if the increase in weeds was so great as to drastically alter the native composition of the local or regional setting areas. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-5a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b and MM 3.5-2b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Special-Status Wildlife

Construction of Alternative B has the potential to directly impact special-status wildlife species, such as the federally and state threatened desert tortoise and the state-threatened Swainson's hawk (during migration and dispersal). Direct impacts would occur from mortality or injury to these species during construction activities (i.e., vehicle collisions, bird collisions with project infrastructure). If they occur, these impacts would be considered significant, especially those to listed species.

Alternative B is likely to result in many fewer direct impacts to desert tortoise based on the combination of incidental data from recent surveys, and low densities found in the Alternative B area in past surveys. Based on the habitat assessment, the potential to impact Mohave ground squirrel is low (Brylski, 2018a). Direct impacts to Swainson's hawk are likely to be reduced proportionally to the reduction in the project size.

Implementation of Mitigation Measures MM 3.5-1a through MM 3.5-12a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b through MM 3.5-11b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Construction of Alternative B also has the potential to indirectly impact special-status wildlife as discussed for Alternative A, but to a lesser degree and likely proportionally reduced with the reduction in project size. Implementation of mitigation measures as discussed for Alternative A would reduce these impacts to a less-than-significant level.

Sensitive Habitats

Construction of Alternative B would likely result in proportionally reduced direct impacts (as compared to Alternative A) to sensitive habitats by the potential filling and/or removal of waters that may fall under the jurisdiction of the state Streambed Alteration program (Fish and Game Code 1602), or RWQCB. If avoidance were not feasible, impacts to jurisdictional resources would be considered significant. These impacts would be significant without mitigation. Implementation of Mitigation Measures MM 3.5-1a and MM 3.5-3a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, and MM 3.5-13b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

Construction of Alternative B, including the gen-tie, would result in direct impacts to sensitive habitats by removal of Joshua tree woodlands. Because Joshua tree woodlands are considered sensitive natural communities, for the purposes of the draft EIS/EIR, impacts to Joshua tree woodland are considered significant. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and 3.5-13a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b, MM 3.5-2b, MM 3.5-14b, and MM 3.5-15b for the gen-tie portion of the site, would reduce these impacts to a less-than-significant level.

Wildlife Movement Corridors

Potential direct and indirect impacts to wildlife movement corridors are not likely to be significant because although these resources may be present at the EUL, abundant adjacent lands would remain available for wildlife movement. Potential direct and indirect impacts to wildlife movement

corridors from the construction of the gen-tie are not likely to be significant because although these resources may be present within the gen-tie area, the construction of the gen-tie line would not restrict wildlife movement and abundant adjacent lands would remain available for wildlife movement. No mitigation is required.

Operation and Maintenance

Alternative B would result in similar biological resources impacts as described for Alternative A. However, because of the reduced size of this alternative, the geographic area within Alternative B would be smaller than that of Alternative A, which would reduce the area within which biological resources impacts would occur. Consequently, biological resources-related impacts associated with operation and maintenance of Alternative B would be reduced relative to Alternative A. Mitigations described for Alternative A would be the same as required for Alternative B.

Decommissioning

Alternative B would cause similar decommissioning-related biological resources impacts as described for Alternative A; however, Alternative B's smaller project size would reduce the area within which biological resources impacts would occur. Consequently, biological resources–related impacts associated with decommissioning of Alternative B would be reduced relative to Alternative A. Mitigations described for Alternative A would be the same as those required for Alternative B.

CEQA: Impact Significance Determination

Because Alternative B would result in approximately 37.5 percent of the physical development of Alternative A, biological resources impacts would be comparably reduced in most cases. However, because this alternative would result in the same types of direct and indirect impacts to biological resources, significance conclusions for the impacts identified for each phase of Alternative B (Construction, Operation and Maintenance, and Decommissioning) would be the same as described for Alternative A. Mitigations described for Alternative A would be the same as required for Alternative B.

Mitigation Measures

Implement Mitigation Measures MM 3.5-1a through MM 3.5-13a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b through 3.5-15b for the gen-tie portion of the project (see Section 3.5.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.5.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or existing biological resources, including general vegetation and wildlife resources, special-status plants, special-status wildlife, and sensitive habitats. No mitigation is required.

CEQA: Impact Significance Determination

Alternative C would result in no impacts to biological resources in the project site, including general vegetation and wildlife resources, special-status plants, special-status wildlife, and sensitive habitats.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No Impacts.

3.5.4 Cumulative Impact Analysis

3.5.4.1 NEPA: Cumulative Environmental Impacts

General Vegetation and Wildlife

A large number of cumulative projects have occurred or are proposed in the Regional Setting area surrounding the proposed project, as presented in Chapter 3.0. The area included in the description of the Regional Setting is considered the geographic scope of the cumulative impacts analysis. While some of these projects are located on previously disturbed lands such as those within developed areas or on lands currently in agricultural use, many are also on or proposed on undeveloped lands in native habitats, similar to the proposed project.

Cumulatively, the proposed project adds to the direct removal of regional native habitats and thus removal of general vegetation and wildlife species. Cumulative indirect impacts are also possible through increased fragmentation of habitat and introduction or increases of non-native plants and wildlife.

Of particular concern is the potential for cumulative indirect impacts to birds, particularly during migration periods. Impacts could result either from mortality or injury caused by colliding with project infrastructure, or by birds landing but unable to regain flight and eventually perishing from predation or dehydration. Cumulatively, when this project is added to other regional projects, especially nearer (within approximately 10 miles) and larger (greater than 500 acres) projects such as the Addison (#36), Avalon (#40), and Rising Tree (#51) wind projects listed on Table 3-1, these effects could be significant as these additive effects may increase the chances for large numbers of birds to be affected. To date, impacts from solar PV projects have shown lower rates of avian mortalities than those found at wind or solar thermal project (USFWS, 2014a), thus the potential incremental impacts from this project are less likely to significantly contribute to regional mortality than other larger projects in the regional setting area using those technologies.

Without implementation of proposed project mitigation, these impacts could combine with impacts of other projects to result in a significant cumulative impact. Implementation of Mitigation Measures MM 3.5-1a, and MM 3.5-3a through MM 3.5-12a for the solar facility portion of the project, as well as Mitigation Measures MM 3.5-1b, MM 3.5-2b, and MM 3.5-4b through MM 3.5-11b for the gen-tie portion of the project, would reduce these impacts. Mitigation Measure MM 3.5-7a includes preparation and approval of a Bird Conservation Strategy in which project-specific

monitoring, project controls in the event that certain thresholds are met, and other requirements would be identified to address and reduce potential avian mortality. These mitigation measures would ensure that impacts from this project would be avoided, minimized, and mitigated, thereby not creating a significant contribution to cumulative impacts in the region.

Special-Status Plants

Cumulatively, the proposed project adds to the direct removal of special-status plants being removed in the regional setting area, when this project is added to other regional projects, especially nearer (within approximately 10 miles) and project with larger direct impacts to the surface (greater than 1,000 acres) such as the Golden Queen Mining project (#45). Cumulative indirect impacts are also possible through the introduction or increase of non-native plants that can out-compete native species. Without mitigation implemented for the proposed project, these impacts would be significant. Implementation of Mitigation MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-5a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b and MM 3.5-2b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level. These mitigation measures would ensure that impacts from this project would be avoided, minimized, and mitigated, thereby not creating a significant contribution to cumulative impacts in the region.

Special-Status Wildlife

Cumulatively, the proposed project adds to the direct removal of special-status wildlife being removed in the regional setting area, including listed species such as the federally and state threatened desert tortoise and state threatened Swainson's hawk (during migration and dispersal). Cumulative indirect impacts are also possible through the introduction or increase of non-native plants that can out-compete native species needed for forage, also potentially affecting prey populations for predators. Introductions or increases in non-native predator populations are also a potentially-significant result of these projects cumulatively as they could alter the native populations in the regional setting area.

For land-based species such as the desert tortoise and for dispersing and migrating species such as the Swainson's hawk, the regional projects that would most add to the cumulative effects on these species are those that are nearer (within approximately 10 miles) and have larger direct footprints (greater than 1,000 acres) projects such as the Golden Queen Mining project (#45). However, the regional setting is not known to support large populations of either desert tortoise, and these species were not found during surveys at the Golden Queen Mine. The Swainson's hawk is also likely to be more affected by regional wind projects than PV solar projects, especially those near and larger projects such as the Addison (#36), Avalon (#40), and Rising Tree (#51) wind projects. Additionally, the EUL Study Area and gen-tie are not within 5 miles of any CNDDB nesting occurrence of Swainson's hawk, so likelihood of nesting, or of nesting Swainson's hawks foraging on the site, is low.

Nonetheless, without mitigation implemented for the proposed project, these impacts would be significant. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, and MM 3.5-6a through MM 3.5-12a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, and MM 3.5-4b through MM 3.5-11b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level.

These mitigation measures would ensure that impacts from this project would be avoided, minimized, and mitigated, thereby not creating a significant contribution to cumulative impacts in the region.

Sensitive Habitats

Although the impacts of the proposed project alone to sensitive habitats is not likely to be significant, the cumulative impacts of all of these projects within the regional setting area creates a situation where the proposed project adds to the direct removal of Joshua tree woodlands. Cumulative indirect impacts to both Joshua tree woodlands and wildlife movement corridors are also possible through increased fragmentation of habitat and introduction or increases of non-native plants.

Without mitigation implemented for the proposed project, these impacts would be significant. Implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-13a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, MM 3.5-13b, MM 3.5-14b, and MM 3.5-15b for the gen-tie portion of the project, would reduce these impacts to a less-than-significant level. These mitigation measures would ensure that impacts from this project would be avoided, minimized, and mitigated, thereby not creating a significant contribution to cumulative impacts in the region.

3.5.4.2 CEQA: Cumulative Impact Significance Determination

Cumulative impacts to biological resources resulting from implementation of the proposed project and other cumulative projects in the area would be less than significant with implementation of Mitigation Measures MM 3.5-1a through MM 3.5-13a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b through 3.5-15b for the gen-tie portion of the project. These mitigation measures would ensure that impacts from this project would be avoided, minimized, and mitigated, thereby not creating a significant contribution to cumulative impacts in the region.

Level of Significance after Mitigation

Cumulative impacts would be less than significant (see Section 3.5.5 for mitigation measures).

3.5.5 Mitigation Measures

3.5.5.1 Solar Facility Mitigation Measures

MM 3.5-1a: Biological Monitoring. Prior to the issuance of grading or building permits, the project proponent shall retain a Lead Biologist who has experience with western Mojave Desert wildlife, is familiar with listed and other special-status species from the project vicinity, has experience with construction compliance monitoring, and is familiar with the ecosystems on and near the project site to oversee compliance with protection measures for all listed and other special-status species. The Lead Biologist shall be assisted by qualified biological monitors. Resumes for the Lead Biologist and qualified biological monitors shall be submitted and approved by the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resource Manager. The Lead Biologist and/or qualified biological monitors shall be on the project site during construction of perimeter fencing and grading activities throughout the construction phase. The Lead Biologist and qualified biological monitors shall have the right to halt all activities that are in violation of the special-status species protection measures. Work shall proceed only after hazards to special-status species are

removed and the species is no longer at risk. The Lead Biologist and qualified biological monitors shall have in her/his possession a copy of all the compliance measures while work is being conducted on the project site.

MM 3.5-2a: Noise Mitigation. The following measure will be implemented to avoid, minimize and mitigate potential impacts to special-status wildlife from noise:

1. Construction equipment will be restricted from use in areas where biological buffers have been established to protect nests or other potentially noise sensitive resources. Buffers will be removed when nests have fledged or failed, or resource concerns no longer exist.

MM 3.5-3a: Worker Environmental Awareness Training and Education Program. Prior to the issuance of grading or building permits and for the duration of construction activities, within 1 week of employment all new construction workers at the project site, laydown area and/or transmission routes shall attend a Worker Environmental Awareness Training and Education Program (WEATEP), developed and presented by the Lead Biologist. If approved by the Edwards AFB Natural Resource Manager and if in conjunction with discussion by the Lead Biologist a training video may be used in certain cases. The Training and Education shall include:

1. Any employee responsible for the operations and maintenance or decommissioning of the project facilities shall also attend the Worker Environmental Awareness Training and Education Program.
2. The program shall include information on the life history of the desert tortoise and migratory birds. The program shall also discuss the legal protection status of the species, the definition of "take" under the Federal Endangered Species Act. measures the project proponent is implementing to protect the species, reporting requirements, specific measures that each worker shall employ to avoid take of wildlife species, and penalties for violation of the Federal Endangered Species Act.
3. An acknowledgement form signed by each worker indicating that Worker Environmental Awareness Training and Education Program has been completed shall be provided to the Edwards AFB Natural Resource Manager.
4. Construction workers shall not be permitted to operate equipment within the construction areas unless they have attended the Worker Environmental Awareness Training and Education Program.
5. A copy of the audio or video training, as well as a list of the names of all personnel who attended the Worker Environmental Awareness Training and Education Program and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resource Manager.
6. The construction crews and contractor(s) shall be responsible for unauthorized impacts from construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by project permits.

MM 3.5-4a: Vegetation Salvage Plan. This measure applies to general vegetation and to special-status plants.

1. Restoration activities will be conducted in accordance with the re-vegetation plans prepared by Edwards Air Force Base (Air Force 1994; Air Force 2012) and any new scientifically proven methodology. Monitoring success of restoration efforts will be

implemented for a longer period than the standard 5-year monitoring period due to slow recovery rates of re-vegetated areas in the desert. The revegetation/restoration plan shall be submitted to the Edwards AFB Natural Resources Manager for comment and approval.

2. Priority for re-vegetation will be given to desert tortoise critical habitat.
3. Project activities that would result in the removal of any vegetation in an area that was previously undisturbed (including areas that were once disturbed and now contain vegetation) may require revegetation/restoration in accordance with the Edwards Air Force Base Revegetation Plan (AFFTC/EM 1994).
4. Lands above underground utilities will be re-vegetated unless a road needs to be constructed and maintained for access and maintenance activities.
5. This project may impact sensitive plant species including alkali mariposa-lily, desert cymopterus, recurved larkspur, Barstow woolly sunflower, and sagebrush loeflingia. The proponent/contractor shall develop protocols for the surveying, translocating where appropriate, and monitoring of sensitive species in the project area. The survey, translocating, and monitoring protocols shall be documented and submitted to the Edwards AFB Natural Resources Manager for comments and approval prior to initiation of work activities. Survey and monitoring data shall be recorded and submitted to the Edwards AFB Natural Resources Manager.

MM 3.5-5a: Weed Management. Weed Management will be consistent with the EAFB Integrated Pest Management Plan and will be implemented to reduce the potential for the introduction or increase of invasive plant species during construction, operation and maintenance, and decommissioning of the proposed project. Weed Management will conform to the Integrated Natural Resources Management Plan for areas within the base boundaries and will include measures related to:

1. Equipment cleaning
2. Site soil management
3. Use of weed free products for erosion control
4. Control methods, including both industrial controls and herbicides, identifying specific herbicides and including the Pesticide Use Proposal or a schedule for completing it
5. Schedule of surveys and reporting for invasive weed identification and control, including success criteria and measures to be implemented if criteria are not met

This plan will be approved by the Air Force, and Kern County prior to the start of construction.

MM 3.5-6a: Raven Management. Prior to grading and construction and after operational, the following measures will be implemented to reduce Raven predation:

1. All trash and food items will be disposed of in common raven-proof containers, and regularly removed from the project site to reduce attraction of common ravens.
2. Water tanks and trucks will be maintained in good working order and free of leaks so common ravens will not be attracted to standing water.

MM 3.5-7a: Bird Conservation Strategy. To mitigate for potential impacts to special-status birds and birds protected under the Migratory Bird Treaty Act and California Fish and Wildlife Code

during construction activity, the following measures shall be implemented as part of the approval for a grading or building permit:

1. The Migratory Bird Treaty Act (MBTA) protects most birds and their active nests (nests with egg or young). Disturbance of an active bird nest with eggs/fledglings or a burrowing owl burrow is not permitted.
2. The proponent/contractor shall develop protocols for surveying and monitoring of migratory birds during both nesting and non-nesting seasons for all related work activities that may potentially harm/harass migratory birds or their active nests. The survey and monitoring protocols shall be documented and submitted to the Kern County Planning and Natural Resources Department and to the Edwards AFB Natural Resources Manager for comments and approval prior to initiation of work activities.
3. During the avian breeding season (1 February – 31 August), a qualified biologist shall conduct a preconstruction avian nesting survey no more than 3 days prior to initial vegetation clearing. Surveys need not be conducted for the entire project site at one time; they may be phased so that surveys occur within 3 days prior to clearing of specific areas of the site. No pre-construction surveys are required outside of the avian breeding season.
4. The surveying biologist must be qualified to determine the species, status, and nesting stage without causing intrusive disturbance. At no time shall the biologist be allowed to handle the nest or its eggs. The survey shall cover all reasonably potential nesting locations on and within 500 feet of the project site, if feasible—this includes ground nesting species, such as California horned lark and killdeer, all shrubs that could support nests, and suitable raptor nest sites such as nearby trees and power poles. Access shall be granted on private offsite properties prior to conducting surveys on private land. If access is not obtainable, biologists shall survey these areas from the nearest vantage point with use of spotting scopes or binoculars.
5. If construction is scheduled to occur during the non-nesting season (September 1 to January 31), no preconstruction surveys or additional measures are required.
6. If construction begins in the non-breeding season and proceeds continuously into the breeding season, no surveys are required so long as all suitable nesting sites have been cleared from the site during the non-nesting season and no new sites have been created.
7. If active nests are found, the proponent/contractor qualified wildlife biologist will determine an appropriate no-disturbance buffer requirement. If the nest(s) are found in an area where ground disturbance is scheduled to occur, the project operator shall avoid the area either by delaying ground disturbance in the area until a qualified wildlife biologist has determined that the birds have fledged or by re-locating the project component(s) to avoid the area. All no-disturbance buffers shall be delineated in the field with visible flagging or fencing material.
8. The applicant shall install power lines in conformance with Avian Power Line Interaction Committee (APLIC) standards for electrocution-reducing techniques as outlined in Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC, 2006), and for collision-reducing techniques as outlined in Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC, 2012), or any superseding document issued by APLIC. The applicant shall monitor for new versions of the APLIC collision and electrocution guidelines and update designs or implement new measures as needed during project construction, provided these actions do not require the repurchase of previously ordered power line structures. Bird diverters and anti-

electrocution features shall be maintained for the life of the project. Details of design components of bird diverters and anti-electrocution features shall be indicated on all construction plans.

9. No rodenticides shall be used on the property. All uses of herbicidal compounds shall be approved by the Edwards AFB Natural Resources Manager, comply with Edwards AFB reporting requirements, observe label and other restrictions mandated by the United States Environmental Protection Agency, California Department of Food and Agriculture, and state and federal legislation, and be applied by qualified personnel.
10. All meteorological and communication towers shall be of monopole design to avoid the use of guy wires to reduce bird collision, injury, or death.
11. All solar mount poles, fencing poles, or other hollow vertical structures shall be capped immediately after installation to prevent bird entrapment and death.
12. The proponent will develop a Bird Conservation Strategy (BCS) using data collected as part of the biological surveys of the site and any data from nearby solar and wind projects that may be relevant. The BSC shall specify one year of post-construction mortality monitoring.
13. The proponent shall develop and implement a wildlife incident reporting program.

MM 3.5-8a: Desert Tortoise Oversight. The following measures are in accordance with the terms and conditions of the U.S. Fish and Wildlife Service Biological Opinion for: Operations and Activities at Edwards Air Force Base, California (8-8-14-F-14) regarding the effects on the federally threatened desert tortoise and its critical habitat.

1. This project will require oversight by a proponent-provided authorized biologist who is approved by the U.S. Fish and Wildlife Service (USFWS) to implement the USFWS Biological Opinion for: Operations and Activities Edwards Air Force Base, California (8-8-14-F-14). The authorized biologist will oversee construction activities as well as all activities conducted prior to installation of desert tortoise exclusion fencing, and will remain available to respond to maintenance activities as necessary. The proponent shall submit a request for authorized biologist approval to the Kern County Planning and Edwards AFB Natural Resource Manager at least 3 months prior to commencement of project activities. All incidents of non-compliance in accordance with the biological opinion or permit must be recorded and reported to the Kern County Planning and Natural Resources Department and to the Edwards AFB Natural Resource Manager.
2. If the authorized biologist is unable to perform all required monitoring/surveys, the proponent shall provide desert tortoise monitors. Desert tortoise monitors shall be approved by the authorized biologist to monitor project activities within desert tortoise habitat, ensure proper implementation of protective measures, and record and report desert tortoise and sign observations in accordance with approved protocol. The monitors will report incidents of noncompliance in accordance with a biological opinion or permit. The desert tortoise monitors will wait for the authorized biologist to move desert tortoises from harm's way when desert tortoises enter project sites. Prior to the arrival of the authorized biologist, the desert tortoise monitor will monitor the desert tortoises to ensure no harm comes to the animal until an authorized biologist assumes care of the animal. Monitors shall not conduct clearance surveys or other specialized duties of the authorized biologist unless directly supervised by an authorized biologist; "directly supervised" means the authorized biologist has direct voice and sight contact with the monitor. The desert tortoise monitor may directly

supervise other personnel to assist with surveying for desert tortoises when deemed necessary.

3. Authorized biologists are the only individuals approved to handle desert tortoises on base. However, nothing prohibits any individual from handling a desert tortoise when necessary to protect the safety or health of the animal when it is in immediate danger.
4. All project personnel working in the area shall attend desert tortoise awareness training prior to commencing work or visiting the work site. Training will be provided by the proponent's authorized biologist and documented per the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resource Manager instructions.
5. The *Desert Tortoise Handout* (DT Handout 412 TWPA Release #18150 20180316) shall be distributed to vehicle and equipment drivers accessing the project area and also be posted at the project site.
6. A desert tortoise pre-activity survey by the contractor's authorized biologist is required prior to commencing work. Any sightings of desert tortoises, signs of desert tortoises, or desert tortoise burrows found within the project area shall be reported immediately to the Edwards AFB Natural Resource Manager.
7. In the event that project development or activities would result in the clearing of a large area of suitable desert tortoise habitat, desert tortoises will be relocated from these sites to other habitat. All translocated desert tortoises will be monitored to determine the success of the relocation. Translocation and monitoring will be performed under the direct supervision of the contractor's authorized biologist in coordination with the Edwards AFB Natural Resources Manager.
8. The project work areas will be fenced, flagged, or marked to define the limit of project activities.
9. Vehicles will generally remain on previously established roads and within staging areas and follow flagged off-road routes that have been surveyed or cleared of desert tortoises. When driving off-road, operators will minimize disturbance to vegetation and not exceed 10 miles per hour. All personnel will inspect under vehicles for desert tortoises prior to operating them in desert tortoise habitat.
10. Project activities between dusk and dawn will be confined to areas free of vegetation and cleared of desert tortoises by contractor personnel who are authorized as described above.
11. Open excavations will be checked regularly by the contractor personnel who are authorized as described above will remove any trapped animals. Open excavations will be covered, backfilled, wildlife ramps placed, or fenced at the end of each workday. At the ends of a ditch or trench, a 3: 1 slope will be created to allow wildlife to exit should they become trapped in the ditch or trench.
12. Any pipes stored within the area shall be capped on open ends or elevated at least 12 inches off the ground to prevent entry by desert tortoise or other wildlife. In the event capping is not feasible, materials will be inspected prior to movement to ensure no wildlife is trapped prior to moving materials. Installation of fencing along roadways will be implemented in areas deemed hazardous to desert tortoises to prevent injury or mortality.
13. Records will be kept according to Edwards AFB Natural Resources Manager instructions and submitted monthly to the Kern County Planning and Natural Resources Department and to Edwards AFB Natural Resources Manager regarding incidents of non-compliance with the biological opinion, acres of desert tortoise habitat disturbance, acres of habitat

restoration, wildlife sightings, wildlife injury, wildlife mortality, and desert tortoise handling. Submission of Geographic Information System (GIS) deliverables will be per the most current Edwards Air Force Base Standards for GIS Deliveries.

MM 3.5-9a: Nesting Birds and Raptors. The following survey actions shall be complied with:

1. If construction is scheduled to commence during the non-nesting season (i.e., September 1 to January 31), no preconstruction surveys or additional measures are required.
2. To avoid impacts to nesting birds in the project site, a qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitat within the project site for construction activities that are initiated during the breeding season (i.e., February 1 to August 31). The surveying biologist must be qualified to determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance.
    a. The raptor survey shall focus on potential nest sites (e.g., cliffs, large trees, windrows) within a 0.5-mile buffer around the project site.
    b. Surveys shall be conducted no more than 3 days prior to construction activities.
    c. Surveys shall not be conducted for the entire project site at one time; they must be phased so that surveys occur shortly before a portion of the project site is disturbed.
3. If active nests are found, the proponent/contractor qualified wildlife biologist will determine an appropriate no-disturbance buffer requirement and no construction within the buffer allowed until the Lead Biologist or onsite qualified biological monitor has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the nest). Encroachment into the buffer may occur at the discretion of the Lead Biologist or onsite qualified biological monitor.

MM 3.5-10a: Preconstruction Clearance Surveys. Preconstruction surveys for desert kit fox, American badger, and Mohave ground squirrel shall be conducted within the project boundaries by the Lead Biologist or qualified biological monitor within 14 days of the start of any vegetation clearing or grading activities. Methodology for preconstruction surveys shall be consistent with standard industry practice for conducting these surveys, and may be conducted simultaneously with preconstruction surveys for desert tortoise and burrowing owl. Surveys shall not be conducted for all areas of suitable habitat at one time; they must be phased so that surveys occur within 30 days of the portion of the project site being disturbed. If any evidence of occupation of the project site by desert kit fox or American badger is observed, a buffer shall be established by a qualified biological monitor that results in sufficient avoidance, as described below:

1. Preconstruction surveys shall be conducted by the Lead Biologist or onsite qualified biological monitors for the presence of American badger or desert kit fox dens within 30 days prior to commencement of construction activities. The surveys shall be conducted in areas of suitable habitat for American badger and desert kit fox, which includes desert scrub habitats. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days prior to that portion of the project site disturbed. If potential dens are observed and avoidance is feasible, the following buffer distances shall be established prior to construction activities (except for use of existing roads by rubber-tired vehicles):
    a. Desert kit fox or American badger potential den: 30 feet.
    b. Desert kit fox or American badger active den: 100 feet.

c. Desert kit fox occupied natal den (during natal season): 500 feet. Natal season for desert kit fox is January 1 through August 31. Active natal dens may become inactive prior to August 31. The Lead Biologist or qualified biological monitor can determine natal den status through remote camera monitoring, in consultation with CDFW.

d. If avoidance of the potential dens is not possible, the following measures are required to avoid potential adverse effects to the American badger and desert kit fox:

i. If the Lead Biologist or onsite qualified biological monitor determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent American badgers or desert kit foxes from re-using them during construction.

ii. If the Lead Biologist or onsite qualified biological monitor determines that potential dens may be active, an onsite passive relocation program shall be implemented for non-natal dens. This program shall consist of determining status of the den (active natal or active non-natal), excluding American badgers or desert kit foxes from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for 7 days to confirm usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. After the Lead Biologist or onsite qualified biological monitor determines that American badgers or desert kit foxes have stopped using the dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction. Passive relocation of natal dens is limited to outside the natal season (January 1 through August 31) or after the Lead Biologist or onsite qualified biological monitor documents that the natal den has become inactive.

iii. During fencing, vegetation clearing, and initial grading activities, daily monitoring reports shall be prepared by the onsite qualified biological monitors. The Lead Biologist shall prepare a summary monitoring report documenting the effectiveness and practicality of the protection measures that are in place and making recommendations for modifying the measures to enhance species protection, as needed. The report shall also provide information on the overall activities conducted related to biological resources, including the Worker Environmental Awareness Training and Education Program, preconstruction surveys, monitoring activities, and any observed special-status species, including injuries and fatalities. These monitoring reports shall be submitted to the Kern County Planning and Natural Resources Department and to the Edwards AFB Natural Resources Manager on a monthly basis along with copies of all survey reports.

2. If Mohave ground squirrels are found during pre-construction surveys, measures for avoiding and minimizing impacts to Mohave ground squirrels shall include the following:

a. Methods demonstrated to be suitable for excluding Mohave ground squirrels from the work area, such as fencing.

b. Measures and procedures related to regular monitoring of construction for presence of Mohave ground squirrels.

c. A requirement to immediately cease work if a Mohave ground squirrel occurs in a work area.

d. Requirements for worker education material as it pertains to Mohave ground squirrels.

e. Reporting requirements to include providing any reports to the Edwards AFB Natural Resources Manager.

f. Approved Methods for translocating Mohave ground squirrels occupying areas where avoidance is not feasible.

g. Identification of suitable Locations for relocating Mohave ground squirrels.

If relocation of Mohave ground squirrel is necessary, the applicant shall coordinate with CDFW and the Edwards AFB Natural Resources Manager.

MM 3.5-11a: Burrowing Owl Surveys and Avoidance/Relocation.

1. No more than 14 days prior to ground-disturbing activities (vegetation clearance, grading), a qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience) shall conduct a pre-construction take avoidance survey on and within 200 meters (656 feet) of the construction zone (where legally accessible) to identify occupied breeding or wintering burrowing owl burrows.

2. The take avoidance burrowing owl survey shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 Staff Report; CDFW, 2012) and shall consist of walking parallel transects 7 to 20 meters (23 to 66 feet) apart, adjusting for vegetation height and density as needed, and noting any burrows with fresh burrowing owl sign or presence of burrowing owls. Note that owl sign can wash away during rain events and may take several days to build back up again. As each burrow is investigated, biologists shall also look for signs of American badger and desert kit fox. Copies of the burrowing owl survey results shall be submitted to the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resources Manager prior to ground-disturbing activities.

   a. If burrowing owls are detected on site, no ground-disturbing activities shall be permitted within 200 meters (656 feet) of an occupied burrow during the breeding season (February 1 to August 31), unless otherwise authorized by CDFW. During the nonbreeding season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 50 meters (165 feet) from the burrow or as allowed by CDFW. Depending on the level of disturbance and proposed measures, a smaller buffer may be established in consultation with Lead Biologist.

   b. If avoidance of active burrows is infeasible during the nonbreeding season, then a Burrowing Owl Relocation Plan will be developed in coordination with the Edwards AFB Natural Resources Manager. If the owls are not in danger of direct impact, then the default should always be to allow the owls to decide whether they would like to leave the existing burrow site. A component of this is to provide replacement burrows at a 2:1 ratio in nearby suitable habitat, or verify that suitable unoccupied burrows are available nearby. If the owls must be relocated, then before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and scoping, a qualified biologist shall implement a passive relocation program in accordance with Appendix E (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the 2012 CDFW Staff Report on Burrowing Owl Mitigation (CDFW, 2012). Passive relocation consists of excluding burrowing owls from occupied burrows and providing suitable artificial burrows nearby for the excluded burrowing owls. Three consecutive days of negative game camera results are needed to verify absence. This is further supported, by scoping with an endoscope immediately

prior to burrow dismantling. It is important to completely collapse the burrow network when closing the burrow.

MM 3.5-12a: Trench Monitoring Requirements. During construction and decommissioning of the project, all trenches or holes shall be provided with one or more escape ramps constructed of earthen fill or wooden planks (with a minimum 1 foot in width) for the protection of wildlife species and must be inspected by the Lead Biologist, qualified biological monitor, designated compliance manager, project operator, or contractor prior to being filled.

1. Any such features that are left open overnight will be searched each day and prior to construction activities to ensure no animals are trapped. Work will not continue until trapped animals have moved out of open trenches. Open excavations of any kind created during project activities shall be secured at the end of each day by backfilling, placing a cover over the excavation, installing a temporary 412 CEG/CEVA-approved desert tortoise fence, and/or ramping excavations at a 3:1 slope.
2. All open holes, sumps, and trenches within the Project footprint shall be inspected at the beginning, middle, and end of each day for wildlife. If any animals are found in an excavation, immediately notify 412 CEG/CEVA
3. All trenches, holes, sumps, and other excavations with sidewalls steeper than a 1:3 slope shall be covered, when workers or equipment are not actively working in the excavation, which includes cessation of work overnight, or shall have an escape ramp of earth or a non-slip material (with a minimum 1 foot in width) with a less than 1:3 slope. Where an escape ramp is required, it shall be placed at least every 300 feet. To prevent inadvertent entrapment of wildlife, when covers are required according to the conditions outlined above, a qualified biological monitor or designated compliance manager shall oversee the covering of all excavated, trenches, holes, sumps, or other excavations with a greater than 1:4 slope of any depth with barrier material (such as hardware cloth) at the close of each working day such that wildlife are unable to dig or squeeze under the barrier and become entrapped, or excavations shall have an escape ramp of earth or a non-slip material (with a minimum 1 foot in width) with a less than 1:3 slope.
4. The outer 2 feet of excavation cover, shall conform to solid ground so that gaps do not occur between the cover and the ground and secured with soil staples or similar means to prevent gaps. Each morning, mid-day, the end of each day (including weekends and any other non-work days), and immediately before trenches, holes, sumps, or other excavations are back-filled, a qualified biological monitor or designated compliance manager shall thoroughly inspect for wildlife. If wildlife is observed, all activities in the vicinity shall cease and the onsite qualified biological monitor or Lead Biologist shall be consulted.
5. Trenches, holes, sumps, or other excavations that are covered long term shall be inspected at the beginning of each working day to ensure inadvertent entrapment has not occurred.
6. If any worker discovers that wildlife has become trapped, all activities in the vicinity shall cease and Lead biologist or the onsite qualified biological monitor shall be notified immediately. Project workers guided by the Lead Biologist or qualified biological monitor shall allow the trapped wildlife to escape unimpeded before activities are allowed to continue. If the entrapped animal is a federal- or state-listed species and an ITP has been acquired by the project proponent for that species or the species is covered by an existing biological opinion (BO), only a Designated Biologist and/or Authorized Biologist as defined in the terms of the ITP(s) or BO may capture and relocated the animal in accordance with the project ITP or BO provisions. If the entrapped animal is a Federal- or

State-listed species and an ITP or BO has not been acquired by the project proponent for that species, the project proponent should contact the appropriate wildlife agency immediately.

A log shall be kept and provided to the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resources Manager monthly during construction and decommissioning indicating compliance.

MM 3.5-13a: Joshua Tree Woodland Preservation. If avoidance of Joshua tree woodland (defined as areas with 10 percent or more of coverage by Joshua tree) is not feasible, then a Joshua Tree Woodland Preservation Plan, approved by the Kern County Planning and Natural Resources Department and the Edwards AFB Natural Resources Manager, shall be required. The plan shall detail the number of acres Joshua trees woodland to be removed and outline a compensatory mitigation approach based on one or a combination of the following options: (1) payment of an in lieu fee to or purchase of mitigation credits from a third-party organization; or (2) the purchase of mitigation lands at a minimum 1:1 ratio for each acre of impacted Joshua tree woodlands.

If purchase of mitigation land is pursued, the following shall be completed: (1) a deed restriction, conservation easement, or similar instrument shall be established on the mitigation land; (2) a management plan to maintain habitat conditions on the site must be prepared and implemented; and (3) a non-wasting endowment sufficient to implement the management plan must be provided. The mitigation lands shall provide habitat at a 1:1 ratio for impacted Joshua tree woodlands, comparable to the woodlands to be impacted by the project (e.g., similar abundance and size of Joshua trees, similar levels of disturbance or habitat degradation, etc.). The management plan shall specify maintenance and monitoring requirements for the preserved land. Suitable mitigation lands provided for other resources may be used for Joshua tree woodland mitigation.

3.5.5.2 Gen-tie Mitigation Measures

MM 3.5-1b: Biological Monitoring. Prior to the issuance of grading or building permits for generation tie-line construction, the project proponent shall retain a qualified biologist(s) who meets the qualifications of an authorized biologist as defined by U.S. Fish and Wildlife Service to oversee compliance with protection measures for all listed and other special-status species.

1. The project qualified biologist(s) shall be onsite during ground disturbing activities throughout the generation tie-line construction phase. Ground disturbing activities include, but are not limited to: mowing, brush clearance, grubbing, excavation, trenching, grading, cut and roll vegetation clearing, drilling, equipment laydown or parking.
2. The project qualified biologist(s) shall have the right to halt all activities that are in violation of the special-status species protection measures. Work shall proceed only after hazards to special-status species are removed and the species is no longer at risk.
3. The project qualified biologist(s) shall have in her/his possession a copy of all the biological compliance measures while work is being conducted onsite.
4. Prior to issuance of grading or building permits for the generation tie-line construction, contact information for the qualified biologist(s) shall be submitted to the appropriate Kern County Planning and Natural Resources Department.

Any individuals who undertake biological monitoring and mitigation tasks shall be supervised by the qualified biologist(s) and shall have the appropriate education and experience to accomplish biological monitoring and mitigation tasks. Biological monitors shall comply with the above measures.

MM 3.5-2b: Worker Environmental Awareness Training and Education Program. Prior to the issuance of grading or building permits and for the duration of generation tie-line construction activities, within 1 week of employment all new construction workers at laydown area and/or generation tie-line transmission routes shall attend a Worker Environmental Awareness Training and Education Program (WEATEP), developed and presented by the Lead Biologist. The Training and Education shall include:

1. Any employee responsible for the operations and maintenance or decommissioning of the project generation tie-line facilities shall also attend the Worker Environmental Awareness Training and Education Program.
2. The program shall include information on the life history of the desert tortoise; burrowing owl; golden eagle, Swainson's hawk, and other raptors; nesting birds; American badger; desert kit fox; as well as other wildlife and plant species that may be encountered during generation tie line installation activities. The program shall also discuss the legal protection status of each species, the definition of "take" under the Federal Endangered Species Act and California Endangered Species Act, measures the project proponent is implementing to protect the species, reporting requirements, specific measures that each worker shall employ to avoid take of wildlife species, and penalties for violation of the Federal Endangered Species Act or California Endangered Species Act.
3. An acknowledgement form signed by each worker indicating that Worker Environmental Awareness Training and Education Program has been completed would be kept on record.
4. A sticker shall be placed on hard hats indicating that the worker has completed the Worker Environmental Awareness Training and Education Program. Construction workers shall not be permitted to operate equipment within the generation tie-line construction areas unless they have attended the Worker Environmental Awareness Training and Education Program and are wearing hard hats with the required sticker.
5. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the Worker Environmental Awareness Training and Education Program and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department.
6. A copy of the training transcript, training video or informational binder (including such information as trenching protection for kit fox requirements) for specific procedures shall be kept available for all personnel to review and be familiar with as necessary.
7. The generation tie-line construction crews and contractor(s) shall be responsible for unauthorized impacts from generation tie-line construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by project permits. (See MM 3.5-4 (2))

MM 3.5-3b: Noise, Dust and Lighting Mitigation. The following measure will be implemented to avoid, minimize and mitigate potential impacts to special-status wildlife from noise:

1. Construction equipment will be restricted from use in areas where biological buffers have been established to protect nests or other potentially noise sensitive resources. Buffers will be removed when nests have fledged or failed, or resource concerns no longer exist.
2. Implement dust mitigation per Mitigation Measures MM 3.3-1b through MM 3.3-8b above.
3. Night lighting will be kept to the minimum required to conduct project activities and ensure human safety and site security.

MM 3.5-4b: General Avoidance. During construction and decommissioning of generation tie-lines, the project proponent or contractor shall implement the following general avoidance and protective measures:

1. Prior to conducting vegetation clearing or grading activities associated with construction or decommissioning of generation tie-lines, a qualified biologist or biological monitor that has been approved by the qualified biologist shall survey the area immediately prior to conducting these activities to ensure that no special-status animals are present. A qualified biologist or biological monitor shall monitor all initial generation tie-line installations and decommissioning ground-disturbance activities. A report of those activities shall be submitted to the Kern County Planning and Natural Resources Department.
2. Based on the results of generation tie-line pre-construction surveys, if any evidence of occupation of the site by listed or other special-status species is observed, a no- disturbance buffer shall be established by a qualified biologist that results in sufficient avoidance, as described below. If sufficient avoidance cannot be established, construction shall cease in the vicinity of the Animal. For State and/or federally listed species, the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife, as appropriate depending on the species, shall be contacted for further guidance and consultation on additional measures required.
3. All proposed impact areas, including generation-tie line, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid natural resources where possible. Generation tie-line construction-related activities outside of the impact zone shall be avoided.
4. Access roads that are planned for use during generation tie-line installation shall not extend beyond the planned impact area. All vehicle traffic shall be contained within the planned impact area or in previously disturbed areas. Where new access routes are required, the route will be clearly marked (i.e., flagged and/or staked) prior to generation tie-line construction.
5. If exclusion fencing is required by any consulting Resource Agency (i.e., California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service), the site shall be fenced with a temporary exclusion fence to keep special-status terrestrial wildlife species, including desert tortoise, from entering during construction. This exclusion fencing shall be constructed of silt fence material, metal flashing, plastic sheeting, or other materials that will prohibit wildlife from climbing the fence or burrowing below the fence. The fencing shall be buried approximately 12 inches below the surface and extend a minimum of 30 inches above grade. Fencing shall be installed prior to issuance of grading or building permits and shall be maintained during all phases of generation tie-line installation and decommissioning. The fencing shall be inspected by an authorized biologist approved by the Resource Agencies weekly and immediately after all major rainfall events through the duration of construction and decommissioning activities. Any needed repairs to the fence shall be performed on the day of their discovery. Exclusion fencing shall be removed once generation tie-line construction or decommissioning activities are complete. Outside temporarily fenced exclusion areas, the project proponent/operator shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. These areas shall be flagged and disturbance activities, vehicles, and equipment shall be confined to these flagged areas. When consultation with the Resource Agency is required, such Resource Agency may impose additional requirements.

6. To prevent inadvertent entrapment of desert kit foxes, badgers, or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered with plywood or similar materials at the close of each working day, or provided with one or more escape ramps constructed of earth fill or wooden planks that are no less than 12 inches wide and secured at the top and spaced at 100 foot intervals. Covered and non-covered holes or trenches shall be thoroughly inspected for trapped animals by a qualified biologist or their biological monitor at the beginning and end of each day, including non-work days. Immediately before such holes or trenches are filled, they shall again be thoroughly inspected by trained staff approved by the retained qualified biologist for trapped animals. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If a listed species is trapped, the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife, as appropriate for the species, and Kern County Planning and Natural Resources Department shall be contacted immediately.
7. Burrowing owls, mammals, and nesting birds can use construction pipes, culverts, or similar structures for refuge or nesting. Therefore, all construction pipes, culverts, or similar structures with a diameter of 4 inches or more that are stored at a generation tie-line installation site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved or disturbed in any way until a qualified biologist has been consulted and the animal has either moved from the structure on its own accord or until the animal has been captured and relocated by a qualified biologist holding the appropriate handling permits from the Resource Agencies.
8. No vehicle or equipment parked on the tie-line sites shall be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of wildlife. If present, the animal shall be left to move on its own, or relocated by a qualified biologist holding the appropriate handling permits from the Resource Agencies. No one shall be allowed to touch a listed species without authorization from the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife.
9. Vehicular traffic to and from the tie-line sites shall use existing routes of travel. Cross country vehicle and equipment use outside designated work areas shall be prohibited.
10. A speed limit of 10 miles per hour shall be enforced within the limits of the generation tie-line installation project.
11. Spoils shall be stockpiled in disturbed areas that lack native vegetation when possible. Best management practices (BMPs) shall be employed to prevent erosion in accordance with the proposed project's Stormwater Pollution Prevention Plan (SWPPP) or Erosion Control Plan. All detected erosion shall be remedied within 2 days of discovery or as described in the SWPPP or Erosion Control Plan. Spoils that have been stockpiled and inactive for greater than 10 days shall be inspected by a qualified biologist for signs of special-status wildlife before moving or disturbing the spoils.
12. No refueling within or adjacent to drainages or native desert habitats (within 150 feet) shall be permitted. Contractor equipment shall be fueled on a paved area or containment bins should be placed beneath the refueling activities if not on paved roads, checked for leaks prior to operation and repaired as necessary.

13. The project proponent shall submit a Maintenance and Trash Abatement/Pest Management Program to the Kern County Planning and Natural Resources Department for review and approval. The program shall include, but not be limited to the following:
    a. The project proponent/operator shall clear debris from the project area each day during construction and decommissioning of the generation tie-lines.
    b. Trash and food items shall be contained in closed containers to be locked at the end of the day and removed each day during construction and decommissioning of the generation tie-lines to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.
    c. The project proponent/operator shall erect a sign with contact information for the project proponent/operator's maintenance staff at each generation tie-line site during construction and decommissioning of gen-tie poles, as required by the Kern County Planning and Natural Resources Department.
    d. Receptacles shall include provisions for a locking system to prevent pest/rodent access to food waste receptacles that shall be implemented.
14. Workers shall be prohibited from bringing pets and firearms to the project area and from feeding wildlife.
15. Collection of any plant or intentional killing of wildlife species shall be prohibited.

MM 3.5-5b: Raven Management Plan. A Raven Management Plan shall be prepared and the project will contribute to the U.S. Fish and Wildlife Service Regional Raven Management Program. The Plan will include at a minimum:

1. Identification of all common raven nests along the generation tie-line routes during installation/construction.
2. Weekly inspections during construction under all nests along the generation tie-line route for evidence of raven predation (e.g., bones, carcasses, etc.) and if evidence of listed-species predation is noted, submit a report to the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the Kern County Planning and Natural Resources Department within five calendar days; and
3. Provisions for the management of trash and water that could attract common ravens during the construction and decommissioning phases of the generation tie-line installation.
4. The project proponent/operator shall be required to participate in the regional comprehensive raven management plan, to address biological resources; the project proponent/operator shall be subject to compensation through the payment of a one-time fee not to exceed $150 and no less than $105 per disturbed acre of land during construction of gen-tie pole locations, as established by the Desert Managers Group. Payment shall be made prior to starting construction activities. Evidence of the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife determination and payment of any required fees shall be submitted to the Kern County Planning and Natural Resources Department.

MM 3.5-6b: Avian Power Line Specifications. For generation tie-line construction, the project proponent/operator shall:

1. Construct all generation tie-lines to the 2006 Avian Power Line Interaction Committee Guidelines specifications to protect birds from electrocution and collision. Appropriate notes regarding these specifications shall be included on any grading permit, building permit or final map.
2. After construction, submit written documentation to the Kern County Planning and Natural Resources Department, and the California State Lands Commission, verifying that all generation tie- lines are constructed to the 2006 Avian Power Line Interaction Committee Guidelines. The project proponent/operator shall conform to the latest practices (as outlined in the 2006 Avian Power Line Interaction Committee Guidelines document) to protect birds from electrocution and collision.
3. Install power collection and generation tie-lines utilizing Avian Power Line Interaction Committee standards for collision reducing techniques as outlined in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee, 2006).

MM 3.5-7b: Nesting Birds and Raptors. To mitigate for potential impacts to special-status birds and birds protected under the Migratory Bird Treaty Act and California Fish and Game Code during generation tie line route construction and decommissioning activities, the following measures shall be implemented as part of the approval for a grading or building permit.

1. During the avian nesting season (February 1 – August 31), a qualified biologist shall conduct a preconstruction avian nesting survey no more than 7 days prior to initial vegetation clearing. Surveys need not be conducted for the entire project site at one time; they may be phased so that surveys occur within 7 days prior to clearing of specific areas of the generation tie-lines. The surveying biologist must be qualified to determine the species, status, and nesting stage without causing intrusive disturbance. At no time shall the biologist be allowed to handle the nest or its eggs. The survey shall cover all reasonably potential nesting locations on and within 500 feet of the tie line site—this including ground nesting where species, such as California horned lark and killdeer might nest, all shrubs that could support nests, and suitable raptor nest sites such as nearby trees and power poles. Access shall be granted on private offsite properties prior to conducting surveys on private land. If access is not obtainable, the biologist shall survey these areas from the nearest vantage point with use of spotting scopes or binoculars.
2. If generation tie-line construction is scheduled to occur during the non-nesting season (September 1 through February 1), no preconstruction surveys or additional measures are required for non-listed avian species.
3. If generation tie-line construction begins in the non-nesting season and proceeds continuously into the nesting season within any particular construction or decommissioning area, no surveys are required for non-listed avian species so long as all suitable nesting sites have been cleared from active construction/decommissioning areas.
4. If active nests are found, a 100-foot no-disturbance buffer shall be created around passerine species' nests unless adjusted by the qualified biologist based on the needs and sensitivities of individual species, and a 300-foot no-disturbance buffer around non-listed raptor species' nests (or a suitable distance otherwise determined in consultation with California Department of Fish and Wildlife). These buffers shall remain in effect until a qualified wildlife biologist has determined that the birds have fledged or the proposed project component(s) have been redesigned to avoid the area. All no-disturbance buffers shall be delineated in the field with visible flagging or fencing materia**l.**

MM 3.5-8b: Preconstruction Desert Tortoise Surveys. Within 14 days prior to the commencement of any ground-disturbing activities for generation tie-line construction the project proponent shall conduct preconstruction surveys for desert tortoise within each generation tie-line construction site. The surveys shall be conducted in accordance with the U.S. Fish and Wildlife Service protocol (2010). If no burrows or tortoises are discovered during preconstruction surveys, no further mitigation is necessary. A survey shall be submitted with supporting evidence included such as photographs of areas/locations that may be suitable for this habitat, etc.

If burrows or tortoises are identified during preconstruction surveys, project proponent shall be required to:

1. Potential burrows will be buffered by 30 feet unless they can be shown to be unoccupied or the authorized biologist believes a smaller buffer is appropriate in order to protect underground burrows. Examples of situations where smaller buffers may be appropriate may include: burrows obviously head in different direction from the impact; taking into consideration the type of activity near the burrow (i.e., will it have potential to crush a burrow); is the burrow adjacent to an existing thoroughfare that receives vehicle use already and is the proposed activity similar in nature etc.
2. All activities shall cease within 200 feet of tortoises and the tortoises shall be allowed to move off the site on their own. If desert tortoises occur in a work area and they will not leave of their own accord, then it will be necessary to coordinate with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. Physical relocation of a desert tortoise may not occur unless approved by the wildlife agencies and this may require authorizations pursuant to Incidental Take Permits from the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife.
3. Should the applicant obtain a permit for the incidental take of desert tortoise, the applicant shall develop a plan for desert tortoise translocation and monitoring prior to gen-tie line project construction. The plan shall provide the framework for implementing the following measures:
    a. Clearance surveys shall occur on a daily basis where construction activities occur within or adjacent to suitable desert tortoise habitat.
    b. Any desert tortoises found during clearance surveys or pre-construction surveys, if avoiding the tortoise(s) is not feasible, shall be placed in suitable, undisturbed habitat within 500 meters (1,640 feet) of their original location. The qualified desert tortoise biologist shall determine the best location for release, based on the condition of the vegetation, soil, other habitat features, and the proximity to human activities. If desert tortoises are found in a construction area where fencing was deemed unnecessary, work will cease until the qualified desert tortoise biologist moves the tortoise(s) within 500 meters (1,640 feet) of their original location.
    c. Relocation of any tortoises shall follow the Guidelines for Handling Desert Tortoises during Construction Projects (Desert Tortoise Council 1994, revised 1999).
    d. An Authorized Biologist shall remain on site until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a monthly basis throughout construction in order to ensure project compliance with mitigation measures.
    e. An Authorized Biologist shall remain on-call throughout fencing and grading activities in the event a desert tortoise wanders onto the gen-tie-line site.
    f. If an incidental take permit is being obtained, compensatory mitigation for the loss of desert tortoise habitat shall be provided through purchase of credit from an existing

mitigation bank, such as the Desert Tortoise Natural Area, private purchase of mitigation lands, or onsite preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a 1:1 ratio to reduce potential effects to less-than-significant levels.

g. Develop a plan for desert tortoise translocation and monitoring prior to project construction. The plan shall provide the framework for implementing the following measures:

h. If a permanent tortoise-proof wild-friendly fence is practicable, a fence shall be installed around all gen-tie line construction areas prior to the initiation of earth disturbing activities, in coordination with the Lead Biologist or on-site qualified biological monitor. The fence shall be constructed of 0.5-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during gen-tie line construction, and maintained when necessary by the project proponent to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Common raven perching deterrents shall be installed as part of the fence construction.

i. After fence installation, an Authorized Biologist shall conduct a preconstruction survey for desert tortoise within the construction site. An Authorized Biologist has the appropriate education and experience to accomplish biological monitoring and mitigation tasks and is approved by the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. Two surveys without finding any desert tortoises or new desert tortoise sign shall occur prior to declaring the site clear of desert tortoises.

j. All burrows that could provide shelter for a desert tortoise shall be hand-excavated prior to ground-disturbing activities.

k. An Authorized Biologist shall remain on site until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a monthly basis throughout construction in order to ensure project compliance with mitigation measures.

l. An Authorized Biologist shall remain on-call throughout fencing and grading activities in the event a desert tortoise wanders onto the tie-line site.

If an ITP is being obtained, compensatory mitigation for the loss of desert tortoise habitat shall be provided through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area, private purchase of mitigation lands, or on-site preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a 1:1 ratio to reduce potential effects to less-than-significant levels.

4. The Raven Management Plan developed for the construction of the generation tie-line sites, (as noted in section MM 3.5-5) shall include at a minimum:

a. Identification of all common raven nests within the site during construction.

b. Weekly inspections during construction under all nests in the tie-line sites for evidence of desert tortoise predation (e.g., scutes, shells, etc.).

c. If evidence of desert tortoise predation is noted, a report shall be submitted to the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the Kern County Planning and Natural Resources Department within five calendar days.

d. Provisions for the management of trash that could attract common ravens during the construction and decommissioning phases of the generation tie-line.

MM 3.5-9b: Preconstruction Burrowing Owl Surveys. A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience, as demonstrated in the submitted resume for approval with the Kern County Planning and Natural Resources Department) shall conduct preconstruction surveys of the permanent and temporary impact areas to locate active breeding or wintering burrowing owl burrows within 14 days prior to ground-disturbing for generation tie-line construction activities (i.e., vegetation clearance, grading, tilling). The survey methodology shall be consistent with the methods outlined in the 2012 California Department of Fish and Game Staff Report on Burrowing Owl Mitigation and including the following:

1. Surveys shall be conducted by walking parallel transects 7 to 20 meters apart, adjusting for vegetation height and density as needed, and noting any potential burrows with fresh burrowing owl sign or presence of burrowing owls. Surveys may be conducted concurrently with desert tortoise preconstruction surveys. Photographic submissions to the Kern County Planning and Natural Resources Department as part of survey results are encouraged regardless of surveys results.

2. As each burrow is investigated, surveying biologists shall also look for signs of American badger and desert kit fox. Copies of the survey results (including photographs) shall be submitted to California Department of Fish and Wildlife and the Kern County Planning and Natural Resources Department as part of the monthly biological monitoring reporting requirements.

3. If burrowing owls are detected onsite, no ground-disturbing activities shall be permitted within a buffer of no fewer than 100 meters (330 feet) from an active burrow during the breeding season (i.e., February 1 to August 31), unless otherwise authorized by California Department of Fish and Wildlife. During the non-breeding (winter) season (i.e., September 1 to January 31), ground-disturbing work can proceed as long as the work occurs no closer than 50 meters (165 feet) from the burrow. Depending on the level of disturbance, a smaller buffer may be established in consultation with California Department of Fish and Wildlife.

4. If burrow avoidance is infeasible during the non-breeding season or during the breeding season where resident owls have not yet begun egg laying or incubation, or where the juveniles are foraging independently and capable of independent survival, a qualified biologist shall implement a passive relocation program in accordance with Appendix E1 (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the 2012 California Department of Fish and Game Staff Report on Burrowing Owl Mitigation.

5. If passive relocation is required, the qualified biologist shall prepare a Burrowing Owl Exclusion and Mitigation Plan and Mitigation Land Management Plan in accordance with 2012 California Department of Fish and Game Staff Report on Burrowing Owl Mitigation for review and approval by California Department of Fish and Wildlife prior to passive relocation activities. If passive relocation is required, the project proponent shall implement the Mitigation Land Management Plan and permanently conserve in a conservation easement offsite habitat suitable for burrowing owl at ratio of 15 acres per passively relocated burrowing owl pair, not to exceed the size of the final project footprint. Land

identified to mitigate for passive relocation of burrowing owl may be combined with other offsite mitigation requirements of the proposed project if the compensatory habitat is deemed suitable to support the species. The Passive Relocation Compensatory Mitigation habitat shall be approved by California Department of Fish and Wildlife. If the proposed project is located within the service area of a California Department of Fish and Wildlife-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits in lieu of placing offsite habitat into a conservation easement, if acceptable to California Department of Fish and Wildlife**.**

MM 3.5-10b: Special-Status Mammals Management Plan. A Special-Status Mammals Management Plan will be written to avoid and minimize impacts to the Mohave ground squirrel, desert kit fox, and American badger if these resources are determined to be present on the proposed generation construction tie-line sites. If no Mohave ground squirrels are found during focused surveys, this plan will not be required and the following measures will be used to minimize impacts to American badger:

1. All dens and burrows large enough to be used by desert kit fox or American badger and in areas of potential direct impacts from generation tie-line construction (from crushing of the burrows and dens) will be carefully excavated to passively relocate these species from the immediate area. These dens will be observed by remote camera for a minimum of three days prior to excavation. If any sign of breeding burrowing owls, kit fox, or American badger is present during this time, three additional days of observation will be conducted to determine whether the burrow supports an active nest or natal den. No burrows supporting a nest or natal dens will be excavated until ongoing cameras monitoring shows no behaviors related to nesting or a natal den are observed, or until outside the period of nesting and natal den activity (approximately Dec-Feb).
2. Speed limits on generation tie-line components will be a maximum of 20 miles per hour during the day and 10 miles per hour during the night to avoid vehicle collisions;
3. If any desert kit fox or American badgers are found dead, ill, or injured on the project components, California Department of Fish and Wildlife will be notified with 24 hours to determine an appropriate course of action. Mortalities will be immediately stored in a project freezer until California Department of Fish and Wildlife determines any potential needs for necropsy.
4. If Mohave ground squirrels are found to be present, the completion of a State permit for this species would be completed prior to the start of generation tie-line construction.
5. If the plan is necessary, it will be approved by the California Department of Fish and Wildlife prior to the start of generation-tie line construction.

MM 3.5-11b: Trench Monitoring Requirements. During construction and decommissioning of the generation tie-line routes, all trenches or holes more than six (6) inches deep shall be provided with one or more escape ramps constructed of earthen fill or wooden planks (with a minimum 1 foot in width) for the protection of wildlife species and must be inspected by the Lead Biologist, qualified biological monitor, designated compliance manager, project operator, or contractor prior to being filled.

1. Any such features that are left open overnight will be searched each day and prior to construction activities to ensure no animals are trapped. Work will not continue until trapped animals have moved out of open trenches.

2. All open holes, sumps, and trenches within the Project generation tie-lie footprint shall be inspected at the beginning, middle, and end of each day for wildlife.

3. All trenches, holes, sumps, and other excavations with sidewalls steeper than a 1:1 (45 degree) slope and that are between 2 and 8 feet deep shall be covered, when workers or equipment are not actively working in the excavation, which includes cessation of work overnight, or shall have an escape ramp of earth or a non-slip material (with a minimum 1 foot in width) with a less than 1:1 (45 degree) slope. All trenches, holes, and other excavations with sidewalls steeper than a 1:1 (45 degree) slope and greater than 8 feet deep shall be covered or have an escape ramp of earth or a non-slip material (with a minimum 1-foot in width) with a less than 1:1 (45 degree) slope, when workers or equipment are not actively working in the excavation and at the end of each work day. Where an escape ramp is required, it shall be placed every 300 feet. To prevent inadvertent entrapment of wildlife, when covers are required according to the conditions outlined above, a qualified biological monitor or designated compliance manager shall oversee the covering of all excavated, trenches, holes, sumps, or other excavations with a greater than 1:1 (45 degree) slope of any depth with barrier material (such as hardware cloth) at the close of each working day such that wildlife are unable to dig or squeeze under the barrier and become entrapped, or excavations shall have an escape ramp of earth or a non-slip material (with a minimum 1 foot in width) with a less than 1:1 (45 degree) slope.

4. The outer 2 feet of excavation cover, shall conform to solid ground so that gaps do not occur between the cover and the ground and secured with soil staples or similar means to prevent gaps. Each morning, mid-day, the end of each day (including weekends and any other non-work days), and immediately before trenches, holes, sumps, or other excavations are back-filled, a qualified biological monitor or designated compliance manager shall thoroughly inspect for wildlife. If wildlife is observed, all activities in the vicinity shall cease and the onsite qualified biological monitor or Lead Biologist shall be consulted.

5. Trenches, holes, sumps, or other excavations that are covered long term shall be inspected at the beginning of each working day to ensure inadvertent entrapment has not occurred.

6. If any worker discovers that wildlife has become trapped, all activities in the vicinity shall cease and Lead biologist or the onsite qualified biological monitor shall be notified immediately. Project workers guided by the Lead Biologist or qualified biological monitor shall allow the trapped wildlife to escape unimpeded before activities are allowed to continue. If the entrapped animal is a federal- or state-listed species and an ITP has been acquired by the project proponent for that species, only a Designated Biologist and/or Authorized Biologist as defined in the terms of the ITP(s) may capture and relocated the animal in accordance with the project ITP provisions. If the entrapped animal is a Federal- or State-listed species and an ITP has not been acquired by the project proponent for that species, the project proponent should contact the appropriate wildlife agency immediately.

7. A log shall be kept and provided to the Kern County Planning and Natural Resources Department monthly during construction and decommissioning indicating compliance.

MM 3.5-12b Vegetation Salvage Mitigation and Monitoring Plan (VSMMP). If required by CDFW or LRWQCB, a Vegetation Salvage Mitigation and Monitoring Plan (VSMMP) shall be prepared that outlines the compensatory mitigation in coordination with the LRWQCB and CDFW.

1. If on-site mitigation is proposed, the VSMMP shall identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration of alluvial desert scrub. Determination of mitigation adequacy shall be based

on comparison of the restored vegetation habitat with similar, undisturbed habitat in the site vicinity (such as upstream or downstream of the site).

2. The VSMMP shall include remedial measures in the event that performance criteria are not met.
3. If mitigation is implemented offsite, mitigation lands shall be composed of similar or higher quality alluvial desert scrub and preferably located in the vicinity of the site or watershed. Off-site land shall be preserved through a deed restriction or conservation easement and the VSMMP shall identify an approach for funding assurance for the long-term management of the conserved land.
4. Copies of any coordination, permits, etc., with LRWQCB and CDFW shall be provided to the Kern County Planning and Natural Resources Department.

MM 3.5-13b: Jurisdictional Waters Permitting. Prior to gen-tie-line construction, a formal jurisdictional delineation would be prepared in areas where no previous delineation has been performed for the project that describes these resources and the extent of jurisdiction under the CDFW and RWQCB. A review of streambeds along the proposed gen-tie routes has been prepared (Dudek 2018). If it is determined during final siting that ephemeral drainages cannot be avoided, the project applicant shall be subject to provisions as identified below:

1. If avoidance is not practical, prior to ground disturbance activities that could impact these aquatic features, the project applicant shall file a complete Report of Waste Discharge with the Lahontan RWQCB to obtain Waste Discharge Requirements and shall also consult with California Department of Fish and Wildlife on the need for a streambed alteration agreement. Correspondence and copies of reports shall be submitted to the Kern County Planning and Natural Resources Department.
2. Based on consultation with the Lahontan RWQCB and CDFW, if permits are required for the project, appropriate permits shall be obtained prior to disturbance of jurisdictional resources.
3. Compensatory mitigation for impacts to unvegetated streambeds/washes shall be identified and secured prior to disturbance of the features at a minimum 1:1 ratio, as approved by the RWQCB or CDFW either through onsite or offsite mitigation, or purchasing credits from an approved mitigation bank.
4. The project proponent shall comply with the compensatory mitigation required and proof of compliance, along with copies of permits obtained from RWQCB and/or CDFW, shall be provided to the Kern County Planning and Natural Resources Department.

MM 3.5-14b: Joshua Tree Impact Plan. Prior to issuance of grading or building permits for the generation tie-line installation the applicant shall develop a Joshua Tree Impact Plan. The Plan shall be prepared by a qualified biologist pre-approved by the Kern County Planning and Natural Resources Department and who is familiar with Western Mojave Desert species and ecosystems. At a minimum, the plan shall include the following:

1. Demonstration of full avoidance of Joshua trees as part of construction, indication of the number of trees and total area of Joshua tree woodland that would be impacted including a discussion of Joshua tree population age and health and the number of Joshua trees that could be relocated within the buffer area of the generation tie-lines (and suitable areas elsewhere).

2. Methods shall be specified for avoiding specific Joshua tree(s) and suitable candidates for translocation identified.
3. Avoidance measures during generation tie-line construction activities, such as delineating work areas and specific Joshua trees that shall be avoided. If necessary, Joshua trees should be flagged for protection or translocated to the onsite buffer area within sparsely vegetated and/or disturbed areas that are suitable for planting native desert species.
4. Monitoring requirements for any translocated Joshua trees that will be relocated. Post-monitoring of all translocated Joshua trees, if any, shall be required a minimum of 3 years following relocation to verify that the trees have adapted and are in good health. The Plan shall identify contingency measures if a tree or group of trees die, such as replanting and continued monitoring, or an in lieu fee payment.
5. Detail relocation methods. The root ball shall be preserved during relocation of Joshua trees. Preferably, a tree spade should be used to relocate Joshua trees in order to preserve the entirety of the tree's root ball. Success of relocated trees shall be a minimum of 90 percent after 3 years. The Plan shall identify the appropriate time of year for transplanting Joshua trees, and shall consider the plant's original and transplanted physical orientation, prevailing wind direction, soil type of the original and transplanted locations, and other related attributes which may affect the successful transplantation of the Joshua tree(s). In-lieu fee monetary funding may be applied for any tree not meeting the 90 percent success rate.
6. Detail of a 3-year maintenance program for any planned relocated Joshua trees on the site, such as weed maintenance, supplemental irrigation, and support stakes.
7. The plan shall specify that a qualified biologist or biological monitor shall monitor construction and all Joshua trees removed or damaged. A monitoring report shall be submitted to the Kern County Planning and Natural Resources Department to document the condition of the Joshua trees annually for 3 years if any Joshua trees are relocated.
8. Identification of the total area of Joshua tree woodland and an estimate of the number of individual Joshua trees that will be removed and/or relocated for determining of the total funds needed to comply.

MM 3.5-15b: In-lieu of Fee for Loss of Joshua Tree Woodland. The project proponent(s) may mitigate all or part of the project's impacts to Joshua tree woodlands by funding the acquisition and management in perpetuity of Joshua tree woodland, or habitats similar to those that contain impacted Joshua trees onsite that are located within the same bioregion and/or watershed, as approved by the Kern County Planning and Natural Resources Department. Funding and management shall be provided through a Kern County approved Conservation Plan, either through an existing mitigation bank (e.g., as managed by the City of Lancaster Parks, Recreation and Arts Department) or through a third-party entity such as the Wildlife Conservation Board or a regional Land Trust. The in-lieu fee shall provide sufficient funds to acquire appropriate lands to provide habitats containing Joshua trees at a 1:1 ratio for impacted lands, comparable to the habitat to be impacted by the project based on similar abundance and size of Joshua trees, similar co-dominant vegetation, suitable soils and hydrology, and similar levels of disturbance or habitat degradation (or lack thereof). The County-approved biologist shall submit confirmation of the

total area of Joshua tree woodland and an estimate of the number of individual Joshua trees that will be removed.

3.5.6 Residual Impacts after Mitigation

With careful and thorough implementation and monitoring of the mitigation measures listed in Section 3.5.5, no residual significant impacts would be anticipated from the proposed project within the regional setting area.

3.6 Cultural and Paleontological Resources

3.6.1 Affected Environment

This section of the EIS/EIR describes the affected environment for cultural and paleontological resources in the Proposed Action area, including the regulatory and environmental settings.

The information provided here is based primarily on three cultural resources inventories (Hale and Denniston, 2017; Hale et al., 2018; ECORP Consulting Inc., 2013), an archaeological resources evaluation report (Hale and Colston, 2019), and 10 archaeological site evaluation forms (Red Horse, 2019) provided in Appendices B5 through B8 of this EIS/EIR. All four studies were conducted in compliance with NEPA and CEQA to identify cultural resources in the project area. Because of the confidential nature of cultural resources, information regarding locations of these resources has been removed from these reports and is not included in the appendix. The Air Force has initiated and is performing ongoing consultation with the federally recognized Native American Tribes 6and tribal representatives identified by the Native American Heritage Commission (NAHC) in accordance with the National Historic Preservation Act (NHPA) (16 U.S. Code [USC 54 U.S. Code [U.S.C.] 300101 et. seq) and CEQA; this information is incorporated into this section.

In addition, a paleontological resources records search was conducted through the Natural History Museum of Los Angeles County (LACM), the results of which are provided in Appendix B6.

3.6.1.1 Area of Potential Effects

The regulations implementing Section 106 of the NHPA (Title 36 of the Code of Federal Regulations [CFR] Section 800.16(d)) define the Area of Potential Effects (APE) as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16(d)). For purposes of complying with Section 106, the APE for this project has been defined as all areas where physical project activities would occur, including the full extent of all project components and alternatives, i.e., the on-base solar facility and off-base gen-tie route options. For the purposes of this study, the overall APE for considering effects to cultural resources is defined as the 6,000-acre enhanced-use lease (EUL) within which up to 4,000 acres of alternative solar fields could be constructed. Edwards Air Force Base (AFB) has defined 2 solar field alternatives, depicted in Figure 2 through Figure 3 as “Alternatives A and B Solar Assembly.” The Alternative A APE is approximately 4,700 acres; this APE is larger than 4,000 acres to allow for flexibility in design. Alternative B is an approximately 1,500 acre EUL APE. Alternative B is a subset of Alternative A, and contains no areas independent of Alternative A. Both Alternatives are designed around minimizing impacts to the existing resources. Alternative A is the preferred alternative.

3.6.1.2 Scoping Issues Addressed

The following scoping comments related to cultural and paleontological resources were provided by the San Manuel Band of Mission Indians and the NAHC. The following issues and concerns are addressed in this section:

- The San Manuel Band of Mission Indians would like to continue consultation with Edwards AFB and the County of Kern regarding sensitive archaeological sites within the project area.
- To determine whether a project will have a significant adverse effect on the environment, the lead agency will need to determine whether there are historical resources within the area of project effects.
- CEQA was amended in 2014 with Assembly Bill (AB) 52 to create a separate category of tribal cultural resources, and AB 52 applies to any project with a Notice of Preparation (NOP) or Mitigated Negative Declaration (MND) filed on or after July 2, 2015.
- A project that involves the adoption of or an amendment to a General Plan or Specific Plan, or designation of open space, is subject to Senate Bill (SB) 18, which also has consultation requirements.
- If a project is subject to NEPA, then there may be further consultation requirements under Section 106 of the NHPA.
- The NAHC recommends consultation with California Native American tribes as early as possible, and for an agency to consult with their legal counsel to ensure compliance with AB 52, SB 18, and any other appropriate law.
- The commenter provided a summary of the requirements of AB 52 and SB 18.
- Contact the appropriate California Historical Resources Information System (CHRIS) center to determine: if the APE has been surveyed, if known cultural resources are present, the probability for cultural resources to be present, and whether a survey is required.
- If a survey is required, a professional report detailing the findings and recommendations of the study must be prepared.
    - Information regarding the location of sites, human remains, and any associated funerary objects should be kept confidential in a separate confidential appendix.
    - The report must be filed at the appropriate CHRIS center within 3 months after work has been completed.
- Contact the NAHC for a search of the Sacred Lands File and a Native American Consultation List.
- The report and Mitigation Monitoring and Reporting Program should include provisions for treatment of inadvertently discovered resources, plans for the disposition of recovered cultural materials, and provisions for the treatment of inadvertently discovered human remains.

3.6.1.3 Regulatory Framework

Cultural resources are protected under a number of federal, state, and local regulations; Executive Orders; Presidential Memoranda; Department of Defense Instructions (DoDIs); and Air Force

Instructions. Legislation and guidance pertaining to cultural resources is provided in more detail in the Edwards AFB *Integrated Cultural Resources Management Plan* (ICRMP) (Edwards AFB, 2010). The following section summarizes the most pertinent legislation relating to the proposed project.

Federal

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA requires federal agencies to consider the effects of an undertaking on historic properties, which are those resources listed in or eligible for listing in the National Register of Historic Places (NRHP) (36 CFR 60.4), and to provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking. The Proposed Action is an undertaking with the potential to affect historic properties (36 CFR Section 800.3(a)), and therefore is subject to compliance with the requirements of the Section 106 process. The steps of the Section 106 process are accomplished through consultation with the State Historic Preservation Officer (SHPO), federally recognized Native American tribes, local governments, and other interested parties. The goal of consultation is to identify potentially affected historic properties, assess effects to such properties, and seek ways to avoid, minimize, or mitigate any adverse effects on such properties. The agency also must provide an opportunity for public involvement (36 CFR 800.2(d)). Consultation with Native American tribes regarding issues related to Section 106 and other authorities (such as NEPA and Executive Order No. 13007) must recognize the government-to-government relationship between the federal government and Indian tribes.

National Register of Historic Places

The National Register of Historic Places (NRHP) was established as an "authoritative guide to be used by federal, State, and local governments, private groups, and citizens to identify the Nation's historic resources and indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). To be eligible for listing in the NRHP, a resource must meet at least one of the NRHP listing criteria: (a) are associated with events that have made a significant contribution to the broad patterns of our history; (b) are associated with the lives of persons significant in our past; (c) embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) have yielded, or may be likely to yield, information important in prehistory or history. Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for NRHP listing (36 CFR Section 60.4).

Archeological Resources Protection Act

The Archeological Resources Protection Act (ARPA) governs the excavation of archaeological sites on federal and Indian lands, as well as the removal and disposition of archeological collections from those sites. ARPA defines archaeological resources as any material remains of past human life or activities which are of archaeological interest and are over 100 years old, or items found in an archeological context on federal or Native American lands; these resources require a federal permit prior to excavation of artifacts on federal or Native American lands.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) describes the rights of Native American lineal descendants, Native American tribes, and Native Hawaiian organizations with respect to the treatment, repatriation, and disposition of Native American human remains, funerary objects, sacred objects, and objects of culinary patrimony, or "cultural items" with which they show a relationship of lineal descent or cultural affiliation. The goal of NAGPRA is to repatriate Native American human remains, funerary objects, sacred objects and objects of cultural patrimony to culturally affiliated, federally recognized Tribes; provide greater protection for Native American burial sites; ensure more careful control over the removal of Native American human remains, funerary objects, sacred objects, and items of cultural patrimony on federal and tribal lands; and encourage the in situ preservation of archaeological sites, or at least the portions of them that contain burials or other kinds of cultural items. NAGPRA also establishes both criminal and civil penalties for violators.

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act offers provisions of paleontological resources identified on federal, Native American, or state lands and guidance for their management and protection, and promotes public awareness and scientific education regarding vertebrate fossils. The law also requires federal agencies to develop plans for inventory, collection, and monitoring of paleontological resources and establishes stronger criminal and civil penalties for the removal of scientifically significant fossils on federal lands.

Air Force Instructions

The Air Force Instruction 90-2002 directs all echelons of the Air Force to build relationships and conduct consultations with federally recognized tribes.

Air Force Instruction 32-7065 establishes instructions for inventory, project review, and general cultural resources management practices, with the objective of meeting or exceeding Department of Defense (DoD) Measures of Merit (DoDI 4715.16, Enclosure 5). Resources addressed include historic facilities, archaeological sites and collections, traditional cultural resources, and Native American sacred sites. Further, Air Force Instruction 32-7065 provides guidance on the development and implementation of ICRMPS (Edwards AFB, 2012).

Department of Defense Guidance

DoDI 4710.02, Department of Defense Interactions with Federally Recognized Tribes, provides guidance on the interaction between the DoD and federally recognized Native American Tribes, which also supplements information regarding consultation in accordance with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments, and NAGPRA.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act became law on August 11, 1978 (Public Law 95-341, 42 USC 1996 and 1996a). On and after August 11, 1978, "it shall be the policy of the United States to protect and preserve for American Indians their inherent burial right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native

Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites."

Executive Order No. 13007: Indian Sacred Sites

In managing federal lands, "each executive branch agency with statutory or administrative responsibility for the management of federal lands shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites. Each executive branch agency with statutory or administrative responsibility for the management of federal lands shall, as appropriate, promptly implement procedures for the purposes of carrying out the provisions of this order, including, where practicable and appropriate, procedures to ensure reasonable notice is provided of proposed actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites. In all actions pursuant to this section, agencies shall comply with the executive memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments."

State

California Register of Historical Resources

The California Register of Historical Resources (CRHR) was established as an authoritative means for state and local agencies, private groups, and citizens to identify the state's resources of architectural, historical, archaeological, and cultural significance, and to indicate what properties are to be protected (Public Resources Code Section 5024.1[a]). Certain properties, including those listed or formally determined eligible for listing on the NRHP and California Historical Landmarks numbered 770 and higher, have been grandfathered into the CRHR. The State Historical Resources Commission may determine whether or not a resource may be listed in the CRHR, if it meets one or more of the criteria, which are modeled on the NRHP criteria.

California Points of Historical Interest

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. California Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historic resource may be designated as both a landmark and a point. If a point is later granted status as a landmark, the point designation will be retired. In practice, the point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a California Point of Historical Interest, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type within the local geographic region (city or county).

- It is associated with an individual or group having a profound influence on the history of the local area.
- It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

California Environmental Quality Act

Under CEQA (Public Resources Code Section 21084.1), a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. CEQA Guidelines, Section 15064.5, recognize that a historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR; (2) a resource included in a local register of historical resources, as defined in Public Resources Code Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of Public Resources Code Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired) in the significance of a historical resource, then the lead agency must identify potentially feasible measures to mitigate these effects (CEQA Guidelines Section 15064.5(b)(1), 15064.5(b)(4)).

If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated as a unique archaeological resource in accordance with the provisions of CEQA Section 21083. In this case, the site is to be treated in accordance with the provisions of Section 21083.2, which state that the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Public Resources Code Section 21083.1(a)). If preservation in place is not feasible, mitigation measures are required.

Native American Heritage Commission

The NAHC maintains the inventory of places of religious or social significance to Native Americans on public lands. California Public Resources Code Section 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a County Coroner.

Assembly Bill 52 and Related Public Resources Code Sections

AB 52 was approved by California State Governor Edmund Gerald "Jerry" Brown, Jr. on September 25, 2014. The act amended California Public Resources Code Section 5097.94, and added Public Resources Code Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 applies specifically to projects for which an NOP or a Notice of Intent to Adopt a Negative Declaration or MND will be filed on or after July 1, 2015. The primary intent of AB 52 was to include California Native American tribes early in the environmental review process and to establish a new category of resources related to Native Americans that require

consideration under CEQA, known as tribal cultural resources. Public Resources Code Section 21074(a)(1) and (2) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe" that are either included or determined to be eligible for inclusion in the CRHR or included in a local register of historical resources, or a resource that is determined to be a tribal cultural resource by a lead agency in its discretion and supported by substantial evidence. On July 30, 2016, the California Natural Resources Agency adopted the final text for tribal cultural resources update to Appendix G of the CEQA Guidelines, which was approved by the Office of Administrative Law on September 27, 2016.

Public Resources Code Section 21080.3.1 requires that, within 14 days of a lead agency determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency must provide formal notification to the designated contact or a tribal representative of California Native American tribes that are traditionally and culturally affiliated with the geographic area of the project (as defined in Public Resources Code Section 21073) and who have requested in writing to be informed by the lead agency (Public Resources Code Section 21080.3.1(b)). Tribes interested in consultation must respond in writing within 30 days from receipt of the lead agency's formal notification, and the lead agency must begin consultation within 30 days of receiving the tribe's request for consultation (Public Resources Code Sections 21080.3.1(d) and 21080.3.1(e)).

Public Resources Code Section 21080.3.2(a) identifies the following as potential consultation discussion topics: the type of environmental review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, project alternatives or appropriate measures for preservation, and mitigation measures. Consultation is considered concluded when either (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource, or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (Public Resources Code Section 21080.3.2(b)).

If a California Native American tribe has requested consultation pursuant to Public Resources Code Section 21080.3.1 and has failed to provide comments to the lead agency or otherwise failed to engage in the consultation process, or if the lead agency has complied with Public Resources Code Section 21080.3.1(d) and the California Native American tribe has failed to request consultation within 30 days, the lead agency may certify an EIR or adopt an MND (Public Resources Code Section 21082.3(d)(2) and (3)).

Public Resources Code Section 21082.3(c)(1) states that any information, including the location, description, and use of the tribal cultural resources, that is submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public without the prior consent of the tribe that provided the information. If the lead agency publishes any information submitted by a California Native American tribe during the consultation or environmental review process, that information shall be published in a confidential appendix to the

environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.

California Public Records Act

The California Public Records Act protects archaeological sites from unauthorized excavation, looting, or vandalism, and explicitly authorizes public agencies to withhold information from the public related to Native American graves, cemeteries, and sacred places maintained by the NAHC.

Health and Safety Code Sections 7050 and 7052

California Health and Safety Code Sections 7050 and 7052 declare that in the event of the discovery of human remains outside of a dedicated cemetery, all ground-disturbing activities must cease and the County Coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

California Penal Code, Section 622.5

California Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands, but specifically excludes the landowner.

Public Resources Code, Section 5097.5

Public Resources Code Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

Local

Kern County General Plan

The Kern County General Plan identifies goals, policies, and implementation measures for the preservation of cultural and historic resources that provide ties with the past and constitute a heritage value to residents and visitors. Further, the General Plan would develop a list of Native American organizations and individuals that would be notified of proposed discretionary projects, and the County will address those discretionary projects in accordance with CEQA. The Kern County General Plan provides goals and policies for development projects in order to reduce impacts of such projects. The policies and implementation measures in the Kern County General Plan for cultural resources that are applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

1.10.3 Archaeological, Paleontological, Cultural, and Historical Preservation

<u>Policy</u>

Policy 25: The County will promote the preservation of cultural and historic resources that provide ties with the past and constitute a heritage value to residents and visitors.

Implementation Measures

Measure K: Coordinate with the California State University, Bakersfield's Archaeology Inventory Center.

Measure L: The County shall address archaeological and historical resources for discretionary projects in accordance with CEQA.

Measure M: In areas of known paleontological resources, the County should address the preservation of these resources where feasible.

Measure N: The County shall develop a list of Native American organizations and individuals who desire to be notified of proposed discretionary projects. This notification will be accomplished through the established procedures for discretionary projects and CEQA documents.

Measure O: On a project-specific basis, the Kern County Planning and Natural Resources Department shall evaluate the necessity for the involvement of a qualified Native American monitor for grading or other construction activities on discretionary projects that are subject to a CEQA document.

The West Edwards Road Settlement Specific Plan states that an archaeological survey should be performed prior to a proposed undertaking, in order to document the archaeological, paleontological, and historical resources within the project area. All surveying and reporting should be performed by a qualified archaeologist and any reports or documentation must be provided to and coordinated with the Southern San Joaquin Valley Archaeological Information Center (SSJVIC) and the Kern County Department of Planning and Community Development, prior to, or concurrent with, any General Plan Amendments, zone changes, or land division maps.

The Mojave Specific Plan includes objectives and policies that seek to preserve and expand historical and cultural resources and support private effects to enhance and promote historical and community resources.

The Willow Springs Specific Plan contains goals, policies, and implementation measures intended to protect preservation of cultural and historic resources contained on sensitive sites within the plan area.

3.6.1.4 Environmental Setting

The project area is situated within the Antelope Valley of the Western Mojave Desert. The Mojave Desert is characterized by a region of isolated mountain ranges, separated by desert plains; it is wedged between the Garlock Fault and the San Andreas Fault, which have uplifted the surrounding mountains relatively rapidly. This uplift resulted in an isolation of the Mojave Desert from the Pacific Coast, creating the interior drainage basins of the Western Mojave Desert, such as the Antelope Valley. On the west end, the Antelope Valley is defined by the Tehachapi and San Gabriel Mountains, which form a V-shaped basin along the western boundary of the Mojave Desert.

The Antelope Valley floor is composed of thick deposits of Quaternary alluvial and lacustral (lakebed) sediments. The alluvial sediments are subdivided into two units: the older or Pleistocene Quaternary sediments and the younger or Holocene alluvial surface deposits, both of which derive from nearby granitic mountains and have been deposited on the valley floor over thousands of

years. The project area itself contains surficial sediments of alluvium from the late Pleistocene to Holocene, ranging in age from 11,700 years ago to the present. These sediments are composed of loosely consolidated mixtures of gravel, sand, and clay and likely extend to depths of 10 feet or more beneath the surface.

3.6.1.5 Regional Setting

Paleoenvironment and Paleontological Setting

Between 12,000 and 10,000 years ago, the western United States faced environmental change on a mass scale; the glaciers began to recede; the climate dramatically became warmer and drier; and vegetation and animals began inhabiting higher elevations (ECORP, 2013).

Based on paleontological evidence, by the late Pleistocene, the Antelope Valley was inhabited by numerous large mammalian species (e.g., sloths, horses, bears, mammoth, bison, camels, and prong-horned antelope), large carnivorous species (e.g., saber-toothed cats, wolves, mountain lions, desert coyotes, and foxes), smaller animals (e.g., rodent, rabbits, squirrels), and a multitude of birds. The evidence also reveals that a large, fresh-water lake, Lake Thompson, covered much of the Antelope Valley 12,000 years ago. The desert vegetation began replacing the low-elevation woodlands sometime between 12,000 and 8,000 years ago and the types of plant and animal communities present in the Antelope Valley today were not established until 4,300 years ago. Approximately 8,000 years ago, Lake Thompson receded, splitting into Rosamond, Buckhorn, and Rogers Lakes (ECORP Consulting, Inc., 2013).

Prehistoric Setting

Since the 1980s, new archaeological research, relying upon radiocarbon dating, obsidian hydration, and flaked stone technology profiles, has refined the prehistoric chronology of human occupation in the Mojave Desert, which dates to the Pleistocene, early Holocene, middle Holocene, and the late Holocene eras. Additionally, it has been theorized that a Pre-Clovis complex, predating 12,000 years before present (BP), occupied portions of the Mojave Desert, although little to no solid archaeological evidence has been documented (ECORP Consulting, Inc., 2013). The chronology has been subdivided into the following:

- The Fluted Point or Late Pleistocene Period (12,000 to 10,000 BP)
- Lake Mojave Period or Early Holocene (10,000 to 7,000 BP)
- The Pinto Period or the Early to Middle Holocene (7,000 to 4,000 BP)
- Gypsum Period (4,000 to 1450 BP)
- Saratoga Spring/Rose Spring Period or the Late Holocene (1,450 to 750 BP)
- Late Prehistoric Period or Late Holocene (950 BP to Contact, circa 180 BP)

The Fluted Point or Late Pleistocene Period (12,000 to 10,000 BP): Although Clovis (ca. 12,000 to 10,000 BP) has been identified as the oldest and best identified cultural complex in the Mojave Desert, it is possible that the area had been occupied prior to 12,000 BP. Clovis is characterized by long, fluted projectile points and Great Basin Concave Base points. At least one Clovis occupation site has been recorded at China Lake, to the north of Edwards AFB; other fluted points identified

in the area have been recorded as isolated artifacts near China Lake and Lake Thompson. Very little information can be inferred about the people who created these types of stone tools, other than they likely lived in highly mobile, small groups, which camped near reliable sources of water during the Pleistocene/Holocene Transition and through the early Holocene (ECORP Consulting, Inc., 2013).

Lake Mojave Period (Early Holocene, 10,000 to 7,000 BP): During the early Holocene, Great Basin Stemmed (Lake Mojave and Silver Lake) projectile points, bifaces (including crescents), and unifaces were used heavily. Lake Mojave artifact assemblages also include nonlocal lithic materials and shell beads, indicating long trips for foraging, or possibly trade routes. Limited quantities of groundstone implements suggest that vegetal resources were not predominate in the diets. As with the Fluted Point Period, social groups of the Lake Mojave Period appear to have been small, highly mobile, and attracted to a variety of environments where water was available. Subsistence also included a minor reliance on small game (e.g., rabbits, hares, rodents). Lake Mojave Period artifacts have been mostly identified on the ground surface, along Rosamond Lake (Edwards AFB), ancient Lake Mojave (dry Silver and Soda Lakes), Barstow, China Lake, and Twentynine Palms (ECORP Consulting, Inc., 2013).

Pinto Period (Early to Middle Holocene, 7,000 to 4,000 BP): The Pinto Period has been defined as a response to Mid-Holocene climatic warming and desiccation in the Great Basin by about 7,000 BP. It is postulated that hunter-gatherers adapted to the environmental change by seasonal migration between the desert floor and higher elevations. As the climate became gradually cooler, springs, streams, and lakes reappeared, with additional migration. Pinto Period artifact assemblages feature less diversity in lithic materials and types, although points have been identified at Pinto Basin, Little Lake, Barstow, and Twentynine Palms. A higher number of groundstone milling tools have been identified than in Lake Mojave assemblages. Additionally, the presence of Olivella shell beads in the assemblages is indicative of trade among coastal groups (ECORP Consulting, Inc., 2013).

Near the end of the middle Holocene, harsh climate change is believed to have resulted in very low population densities within the Mojave Desert; some locations may have faced temporary abandonment. As a result, few archaeological sites have been identified representing a time span between 5,000 and 4,000 BP (between the Pinto and Gypsum complexes).

Gypsum Period (4,000 to 1,450 BP): As the temperatures gradually warmed, it is postulated that the populations adapted more successfully to the warm and dry conditions of the Mojave Desert about 2,000 years ago. Gypsum Period artifact assemblages include corner-notched (Elko), concave-base (Humboldt), and contracting-stemmed (Gypsum) projectile points, leaf-shaped points, stone knives, flake scrapers, T-shaped drills, choppers, hammer stones, shaft smoothers, ornamental items, split-twig animal figures, and paint. Non-lithic assemblages include split-twig animal figures, rock art, shell beads, and paint. Groundstones, including manos, metates, mortars, and pestles, are found as well. Faunal materials also reveal exploitation of rabbits, hares, rodents, split-hoofed animals, hard seeds, and mesquite. Archaeological sites of this period are smaller, more numerous, and spread over a wider array of environments. By 3,000 BP, a division in

language groups is noted, as the Northern Uto-Aztecan peoples separated into Tubatulabalic, Hopic, Numic, and Takic language groups (ECORP Consulting, Inc., 2013).

Saratoga Spring or Rose Spring Period (Late Holocene, 1,450 to 750 BP): By the Late Holocene, the climate was warmer than in previous periods; at the beginning of the Saratoga Spring Period, the environment supported numerous springs, streams, and shallow perennial lakes in the Mojave Desert. By the end of the Saratoga Springs Period, however, the temperature began to rise with severe droughts, attributed to the decline of the Saratoga Spring complex to end around 850 BP. Archaeologically, the Saratoga Spring period is characterized by projectile points indicative of bow-and-arrow technology, which suggests a rise in prehistoric population, also evidenced in the well-developed middens associated with long-term occupations. Other stone tools of this period include the Desert Side-Notched and Cottonwood points. Steatite items and shell beads are present in assemblages, suggestive of trade networks; the Saratoga Spring cultures were influenced by Hakataya and Anasazi contact, as noted by the presence of buffware, brownware, and Anasazi pottery and turquoise (ECORP Consulting, Inc., 2013).

Late Prehistoric Period (Late Holocene, 950 BP to Euro-American contact): Prior to Euro-American contact, it is believed that the prehistoric peoples in the Mojave Desert developed into separate cultural complexes during the Late Holocene. As noted in the Saratoga Springs Period, cultural influences from the Hakataya, Anasazi, and coastal tribes began to emerge, and by 3,000 BP, the Numic speakers segregated into distinct language groups, such as the Southern Paiute, Chemehuevi, Shoshone, and Takic-speaking groups, such as the Serrano, etc.. In the Mojave Desert, Late Prehistoric sites included lithic scatters, temporary campsites, and large villages; the villages included cemeteries and extensive middens. Artifact assemblages include a wide array of materials such as Desert series projectile points, groundstone milling tools, incised stones and pendants, shell beads, brownware, and buffware. The assemblages include lesser quantities of obsidian than prior periods. Faunal assemblages include a varied subsistence strategy involving vegetal foods, deer, hares, rabbits, rodents, and reptiles (ECORP Consulting, Inc., 2013).

Ethnographic Setting

Ethnographic accounts indicate that the project area was used by three groups, the Kitanemuk, Kawaiisu, and Serrano. Each of these is described in the following paragraphs.

Kawaiisu

The Kawaiisu occupied the Piute Mountains at the southern end of the Sierra Nevada Range and the northern part of the Tehachapi Mountains, as well as portions of the valley floors. Kawaiisu economy was based on hunting and gathering, with their primary food sources including acorns, deer, bighorn sheep, rabbits, and pronghorn (ECORP Consulting, Inc., 2013).

Kawaiisu social structure was centered on the family. While no formal chiefs existed, certain leaders were identified, with status being achieved as opposed to being ascribed. The culture also developed complex basketry. Baskets were used to transport and store plant foods. Other food processing items include ceramics; the Kawaiisu have been identified with the production of Owens Valley Brown Ware ceramics (ECORP Consulting, Inc., 2013).

In terms of language, the Kawaiisu were a Numic-speaking group, in contrast to their Takic-speaking neighbors to the south, the Kitanemuk. Closer to the coast, the Tatavium and Gabrielino spoke languages of the Takic branch of the Uto-Aztecan language family. Around 3,000 years ago, Takic-speaking groups moved into coastal southern California from the Great Basin; Numic groups related to the Kawaiisu appeared to arrive in the northeastern portions of Kern County from the Great Basin by Anno Domini (AD) 1,000 or 1,200 (ECORP Consulting, Inc., 2013). Winter villages have been identified in Cache Creek Canyon northeast of the modern town of Tehachapi, and it is postulated that during the summer and fall months, some of these people occupied temporary camps at higher elevations (above 4,000 feet), where they collected acorns and pinyon nuts, processing the foods using bedrock mortars and pestles, and they occasionally used portable mortars. Kawaiisu occupations have been identified in the southern Panamint Valley and southern Death Valley, as well as southeast to Rogers Lake and the Mojave River near present-day Barstow. Stone tools used by the Kawaiisu include Desert Side-Notched arrow points as well as Rose Spring points (small corner-notched expanding-stem points) and Cottonwood Triangular arrow points.

Kitanemuk

Like other Takic-speaking groups, Kitanemuk society had a patrilineal organization. Families grouped together into villages, which were headed by a team of "administrative elite" composed of a chief, messengers, and shamans. Their primary vegetable food sources included acorns, juniper berries, seeds, and yucca buds; small game such as rabbits, squirrels, antelope and deer were also eaten. The Kitanemuk appeared to have good trade relations with most of their neighbors, including the Chumash and Tubatulabal. Social practices included burial of the dead in cemeteries, with some burials including red-colored wood as associated funerary items; cremations were also occasionally utilized for the "administrative elite" (ECORP Consulting, Inc., 2013).

The Kitanemuk occupied the territory extending from the Tehachapi Mountains into the western end of the Antelope Valley. During cooler seasons or at least seasonally, it is believed they migrated into the arid valley floors. During the Late Prehistoric Period, the settlements became permanent along the desert floor, with the most proximal Kitanemuk village to the APE being *Pañūqavea/Šeševyəq*, which was located near modern-day Willow Springs. There are also other Kitanemuk placenames for natural features surrounding the APE, such as Piute Ponds (*Tšəhtšavea*) and Soledad Mountain (*Paʔtqayvea*).

By the Mission Period (1769 to 1834), the Kitanemuk were moved to the missions of San Fernando, San Gabriel, and San Buenaventura. By the 1850s, some Kitanemuk settled at Fort Tejon and nearby Tejon Ranch - i.e., the "San Sebastian Indian Reserve," the first attempted, and failed, Indian Reservation in the state of California, which was officially established in 1853 by Bureau of Indian Affairs Superintendent General Edward Fitzgerald Beale (ECORP Consulting, Inc., 2013). Additionally, ethnohistorical records suggest that as many 21 other Native Californian tribal groups (e.g., Chumash, Yokuts, Kawaiisu, Tübatulabal, Paiute, etc.) were relocated - either willingly or forcibly - to the San Sebastian Indian Reserve during the ten years of its existence (www.tejonindiantribe.com).

While many Kitanemuk people were moved onto the Tule Reservation following the official decommissioning of the San Sebastian Indian Reserve in 1864, there were 81 Kitanemuk and other

Native Californians who remained on the Tejon Ranch to work as ranch hands, as documented in the 1915 "Census of the Indians of El Tejon Band in Kern County, California" conducted by Bureau of Indian Affairs agent John Terrell in 1915. These 81 people, who collectively established the historic "Tejon Canyon Rancheria," comprise the official antecedents of the contemporary federally-recognized Tejon Indian Tribe. In other words, all contemporary Tejon Indians can trace their lineal descent from one of the 81 indigenous people documented in the 1915 Census. Given the unique history of the San Sebastian Indian Reserve, the contemporary Tejon Indian Tribe primarily identifies with its ancestral Kitanemuk language and culture, but also celebrates its polyethnic/multi-tribal heritage by engaging and collaborating with its neighboring sister tribes throughout south-central California (www.tejonindiantribe.com).

Serrano

The Serrano occupied a territory that extends as far north as Fort Irwin, as far east/southeast as Twenty-nine Palms, as far south as Jurupa Valley and the northern reaches of Riverside, and as far west as the Antelope Valley. Serrano living along the Mojave River and in the Mojave Desert were known as the Desert Serrano. The Desert Serrano were related to and had close ties with the Mountain Serrano who inhabited the San Bernardino Mountains and surrounding areas (SMBMI CRM Department 2019). Serrano peoples were organized into clans, with the clan being the largest autonomous political entity. They lived in small villages where extended families resided in circular, dome-shaped structures made of willow frames covered with tule thatching. Each clan had one or more principal villages in addition to numerous smaller villages associated with the principal village (Price et al., 2008).

The Desert Serrano subsistence strategy relied on hunting and gathering, and occasionally fishing. Villages divided into smaller, mobile gathering groups during certain seasons to gather seasonally available foods. The division of labor was split between women gathering and men hunting and fishing (Bean and Smith, 1978; Warren, 1984). Mountain sheep, deer, rabbits, acorns, grass seeds, piñon nuts, bulbs, yucca roots, cacti fruit, berries, and mesquite were some of the more common resources utilized (Bean and Smith, 1978; Warren, 1984).

Despite early European and Spanish contact in 1771, many Serrano remained relatively autonomous until the mid- to late-1800s. However, there is indication that Serrano peoples closest to the missions of San Fernando and San Gabriel, which would include Serrano peoples in the Antelope Valley, were more heavily missionized and removed from their villages en masse between 1819-1834. (Bean and Smith, 1978; Warren, 1984; San Manuel Band of Mission Indians CRM Department 2019). Today, the San Manuel Band of Mission Indians is Serrano, while Morongo includes Serrano and Cahuilla peoples, and the Serrano Nation is comprised of Serrano peoples.

Historic Context

Among the earliest non-native visitors to the area were Spanish explorers, who arrived in the Antelope Valley in the 1770s. By 1828, both Mexican traders and American trappers led by Jedediah Smith established two routes through the area providing access from the Mojave Desert to the coast, via the Old Spanish Trail near the Cajon Pass, and the Owens Valley Road through the Tehachapi Pass. The routes were used later by Kit Carson and John C. Fremont (1844), and later

by survey parties searching for an alternative route for the transcontinental railroad; it would not be until 1876 that the Southern Pacific Railroad extended through the Antelope Valley and 1884 the Atchison, Topeka and Santa Fe Railway traversed through Mojave. By the mid-1860s and 1870s, the Antelope Valley was used extensively as an access route between Los Angeles and mining districts to the east, including mines in the Rosamond area. Rosamond, just west of the Proposed Action area, was named for one of the daughters of an official affiliated with the Southern Pacific Railroad; gold was discovered in the Rosamond Hills by the 1890s, tipping off a short-lived boom (Edwards AFB, 2010).

Colonization companies representing Quakers, German Lutherans, Scots, English, and others began to promote settlement of the southern Antelope Valley by the 1880s (Edwards AFB, 2010). Many of these groups sought areas to practice scientific farming and to establish utopian settlements, with initially successful economies based on agriculture and ranching. Between 1880 and the early 1920s, farms in the Antelope Valley flourished, producing wheat, barley, grains, alfalfa, fruits, and nuts, along with cattle and sheep rearing. Artesian wells were drilled along the valley floor, with the 1-square-mile townsite of Lancaster being established between 1883 and 1884, southwest of the project area. Additional settlers arrived by 1886 and by 1888, Lancaster boasted of a newspaper, a hotel, and multiple other businesses; the next 10 years brought the construction of a Catholic church, and a post office. Following the turn of the century, the Chamber of Commerce organized (1902), and Antelope Valley Union High School (1912), a library (1913), and the Bank of Lancaster and Farmers' Merchant Bank (1913) were constructed. In 1914, electric power was provided to several houses and streets in Lancaster. Portions of Lancaster Boulevard and Sierra Highway were paved in 1916, and with the advent of World War I, the area appeared quite prosperous (ECORP Consulting, Inc., 2013).

Rural areas outside of Lancaster, including the vicinity of the Proposed Action, were settled by families who purchased lands from the federal government or the railroad, or obtained land patents. Railroad parcels included odd-numbered sections, which were sold after 1903 in the project vicinity (ECORP Consulting, Inc., 2013). Lands in even-numbered sections were transferred from public domain to individual settlers under the Homestead or Desert Land Acts. Under the Homestead Act of 1862 (revised in 1912), claimants constructed a house, lived on the land, and cultivated it for 3 to 5 years, and the federal government would issue a patent or deed for the land; unimproved lands reverted to government ownership. Under the Desert Land Act, a claimant could acquire an entire section (640 acres) at a cost of $0.25 per acre and irrigate it within 3 years; later the act was revised to 320 acres/irrigation within 4 years, and the federal government would issue a patent or deed for the land; unimproved lands reverted to government ownership.

Between 1910 and the mid-1930s, hundreds of claims were filed for land within the Edwards AFB boundaries and the Antelope Valley. One in four claims resulted in a transfer from federal to private ownership. In 1921, the Mint Canyon Highway was completed between Lancaster and Los Angeles, reducing travel time, bringing added traffic to the area, and allowing for shipments of grains, alfalfa, and produce to be shipped to markets in Los Angeles. At this time, the Antelope Valley Hospital, courthouse, library, and Antelope Valley Junior College were constructed, and additional roads had been paved. By the 1930s, however, intermittent droughts, flooding, extreme winds, high temperatures, and the Dust Bowl—in addition to a worldwide economic depression—

resulted in the failure of utopian colonies and homesteads, with many residents leaving the area and a decrease in the number of homestead claims being filed (ECORP Consulting, Inc., 2013; Edwards AFB, 2010).

With the onset of World War II, the Antelope Valley saw economic growth due to the arrival of the military. The War Department authorized construction of the Army Air Base at Muroc Lake (the precursor to present-day Edwards AFB), which would play a strategic role in World War II, serving as the primary installation providing long-range air patrols from the Pacific Coast and training air crews for combat. The fledgling military post quickly grew from a tent city to an independent installation; likewise, the population of Lancaster jumped from 3,600 to 29,000 between 1950 and 1960. The 1980s and 1990s saw increased development with the National Aeronautical Space Administration (NASA), as the first space shuttle orbiter was assembled at an aerospace plant in Palmdale and transported to Edwards AFB. Today, the installation serves as a flight test center for testing new aircraft and weaponry, with area that provides a suitable environment for testing propulsion systems and vehicles for space exploration (Edwards AFB, 2010; ECORP Consulting, Inc., 2013).

3.6.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences relating to cultural and paleontological resources for the Proposed Action. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.6.2.1 Assessment Methods/Methodology

Cultural Resources

To evaluate the project's potential effects on cultural resources, two Phase I cultural resources inventories of the project area were conducted, which included records searches and field surveys for the EUL Study Area and gen-tie route options. These studies are documented in detail in two reports. The first report, *Cultural Resources Inventory for the Oro Verde Solar Project, Near the Town of Mojave, Kern County, California, and within Management Region 1, Edwards Air Force Base, Phase I Report* (ECORP Consulting Inc., 2013), covers the EUL Study Area and a previous Gen-Tie Study Area. The second report, *Cultural Resources Assessment of the Gen-Tie Routes for the Edwards Air Force Base (AFB) Solar Project, Kern County, California* (Denniston et al., 2017), conducted an updated records search and field survey of the gen-tie route options, which had been modified since the ECORP study. A third report documents archaeological testing and significance evaluation of resources along the gen-tie route options that could be impacted by the project (Hale et al. 2018, Hale and Colston, 2019). Finally, in winter and spring 2018, ten additional sites were individually evaluated for significance by the Air Force (Red Horse 2019). Six of the ten sites were recommended eligible: EAFB-4193, -4203, -4206, -4232, -4235, and -4238. The remaining four sites were recommended not eligible: EAFB-4171, -4193, -4199, and -5205.

The EUL Study Area has changed shape since the original ECORP (2013) study and as a result, some resources originally identified by ECORP (2013) are no longer included in the current 6,000-acre EUL APE. Also, the APE description, above, indicates, the EUL is larger than the footprint of

the two alternatives (Alternative A and Alternative B) considered in this document. Additionally, the ECORP (2013) and Dudek (2017) studies of the gen-tie route options covered an optional route no longer included in the proposed project. The results of the records searches and surveys from the two project-related studies (ECORP 2013 and Hale et al. 2018) and ten site evaluations by Red Horse (2019) are summarized below for the entire project area. Following this, the number of resources present in the footprints of the Proposed Action (Alternative A, Alternative B, and the gen-tie route options) are presented.

Records Searches

Records searches and historic map reviews were conducted for the EUL Study Area and the gen-tie route options. At the time of the records search for the EUL Study Area (December 2011) (ECORP Consulting, Inc., 2013), the EUL Study Area was defined as 5,692 acres located on Edwards AFB. At the time of the records searches for the gen-tie route options (April and May 2017) (Hale et al., 2018), the options consisted of the east-west options and three north-south options (Options 1, 2, and 3). This EIS/EIR analyzes the east-west options and north-south Options 1 and 2 only.

Edwards AFB cultural resources staff conducted an in-house records search in December 2011 to examine site records and reports they have on file for the EUL Study Area. A records search was conducted in January 2012 at the CHRIS Southern San Joaquin Valley Information Center for a preliminary Gen-Tie Study Area and a ½-mile radius (ECORP Consulting, Inc., 2013). However, this was superseded by additional records searches at the SSJVIC in April and May 2017, covering the final gen-tie route options and a 50-foot buffer (Hale et al., 2018). The records searches included previous survey investigations, site records, historical maps, aerial photographs, land ownership records, and listings of resources in the Historic Property Data File, NRHP, CRHR, California Point of Historical Interest, California Historical Landmarks, and National Historic Landmarks. The records searches included an examination of previous cultural resources survey coverage and reports and known cultural resources within the EUL Study Area and gen-tie route options.

The Edwards AFB records search identified a total of 246 previously recorded cultural resources within the EUL Study Area, including 165 prehistoric and 81 historic-period archaeological sites.

The records searches for the gen-tie route options (East-West Options A, B, and C; and North-South Options 1 and 2) show that 29 cultural resources have been previously recorded within the records search area for the gen-tie route options, including 12 isolates (1 prehistoric and 11 historic period) and 8 archaeological sites (2 prehistoric and 6 historic period), and 9 historic period built environment resources.

Archaeological Inventory

Methods

The records search for the EUL Study Area revealed that 3,187 acres of the 5,692-acre EUL Solar Facility Study had been previously surveyed for cultural resources within the 10 years prior to the Phase I study. These areas were not resurveyed during the Phase I cultural resources study, with the exception of four large previously recorded NRHP-eligible sites (encompassing a total of 635 acres of the EUL Study Area), which were included in the total area surveyed in order to assess the sites' current conditions. A total of 2,505 acres had not been surveyed previously or had not

been surveyed within the past 10 years. Thus, 3,140 acres of the 5,692-acre EUL Solar Facility Study Area were surveyed during the Phase I cultural resources study, and 2,552 acres of the previously surveyed area was not resurveyed (ECORP Consulting Inc., 2013).

An intensive pedestrian survey was conducted between May 8 and June 29, 2012. The survey was conducted by qualified archaeologists using transects spaced no more than 15 meters apart. When an artifact or feature was identified, it was marked with a pin flag or flagging tape, and the area around it subject to more intensive, close-interval survey. An archaeological site was defined as consisting of at least three associated artifacts or a single feature. Cultural resources not meeting the site criteria were recorded as isolates. An attempt was made to relocate each previously recorded resource located within the 3,140-acre survey area; no attempt was made to relocate previously recorded resources located within the 2,552-acre previously surveyed area of the EUL Study Area.

Site-specific visitation was conducted by Dudek in 2018 at the request of the Air Force and in response to concerns by consulting tribes that 16 archaeological sites may have human remains. Dudek visited 16 archaeological sites (EAFB-2240, -2258, -2379, -2380, -2402, -3188, -4188, -4191, -4192, -4193, -4197, -4198, -4200, -4225, -4231, -4238) and relocated pieces of burned bone on the surface, as reported by past recordation efforts (Hale and Colston 2019). All but one piece of bone located in the field were ruled out as human (i.e., they were all identified as non-human animal remains), only one piece of bone located at EAFB-3188 could not be definitively ruled out as human, but is most likely non-human in origin.

The gen-tie route options were covered in two separate field surveys, and, for sake of clarity, both are summarized here. The first survey, conducted on July 3, 2012 (ECORP Consulting., Inc., 2013), covered a preliminary Gen-Tie Study Area and consisted of a reconnaissance-level survey, driven at a slow speed to document historic period built environment resources along the routes. No attempt was made to relocate all previously recorded resources, with the exception of two previously evaluated NRHP-eligible sites (CA-KER-3528H [Road Grade] and CA-KER-3459H [Los Angeles Aqueduct]). The second survey, conducted February 24, 2017 (Hale et al., 2018), consisted of an intensive pedestrian survey of North-South Options 1 and 2. Since all of the East-West options had been fully covered in recent surveys (Hale et al., 2018), a pedestrian survey was not conducted. Instead, previously documented resources along the alignment were spot-checked. The ECORP (2013) study did not include any formal resource evaluations.

Results

A total of 76 new archaeological sites were recorded during the field survey within the EUL Study Area (ECORP Consulting, Inc., 2013). Of these, 19 are historic-period sites and 57 are prehistoric sites. In addition, 121 previously recorded resources within the EUL Study Area were updated. Of these 121 visited resources, 37 were historic period archaeological sites and 84 were prehistoric archaeological sites. An additional 125 previously recorded resources were not updated, because they were located in the portion of the EUL Study Area that was not subject to Phase I survey in 2012.

A total of 123 isolated finds were also recorded within the EUL Study Area. Of the 123 recorded isolates, 44 are historic period and 79 are prehistoric period. No historic period built resources (such as standing structures, buildings, or objects) were recorded within the EUL Study Area.

As a result of the pedestrian survey of gen-tie North-South Options 1 and 2 (Hale et al., 2018), six newly identified cultural resources were recorded, including two isolates (one prehistoric and one historic period) and four archaeological sites (two prehistoric and two historic period).

Archaeological Testing and Evaluation

Additional fieldwork was conducted at seven sites along the gen-tie route options that could be subject to impacts from the Proposed Action (Hale and Colston, 2019). The purpose was to collect data required for resources evaluation according to criteria for listing in the NRHP and CRHR. Tested sites included two prehistoric archaeological sites (SS-S-10 and SS-S-30) and five historic period refuse deposits (P-15-012716, P-15-013801, P-15-013802, SS-S-11, and SS-S-23). Field methods included a combination of surface collection of artifacts using Controlled Surface Collection units and Surface Scrape Units, and test excavation using Shovel Test Pits and Controlled Excavation Units. The evaluation study recommended that one of the resources, SS-S-10, should be found eligible for listing in the NRHP and CRHR under criteria D/4 for its archaeological data potential. However, the study also concluded that the eligible portion of the resource occurs outside the APE for the Proposed Action, and that the portion of the resource within the APE does not contain data that would contribute to its eligibility. The remaining six resources were recommended not eligible for the NRHP or CRHR.

At the direction of the Edwards AFB Cultural Resources Manager (CRM), Red Horse completed individual archaeological significance evaluations of 10 prehistoric archaeological sites in support of the Proposed Action. No formal report was prepared, but site forms were completed that document the evaluation efforts and results. Six of the archaeological sites are recommended eligible for NRHP/CRHR listing under Criterion D/4, respectively (EAFB-4193, -4203, -4206, -4232, -4235, -4238) and four sites are recommended not eligible (EAFB-4171, -4193, -4199, -5205). Site records documenting the evaluations are included as part of the records search in Confidential Appendix B8.

Resources Located within the Project Area

This section summarizes the cultural resources present within each of the two Proposed Action alternatives (based on ECORP Consultants, Inc., 2013), as well as within the gen-tie route options (based on Hale et al., 2018 and Hale and Colston, 2019) (see Appendices B5, B7, and B8). Because isolated artifacts generally lack archaeological context, they are considered ineligible for listing in the NRHP or CRHR and would not be considered significant cultural resources, historic properties, historical resources, or unique archaeological resources. Therefore, isolates are not included in this section, nor are they addressed further in this analysis. Resources within the two Proposed Action alternatives are tabulated by project component, site type, and eligibility status in **Table 3.6-1**.

Alternative A EUL Study Area

A total of 298 cultural resources were recorded within the Alternative A solar field project area. Of these, 215 are prehistoric archaeological sites that are included in the Bissell Basin NRHP eligible

prehistoric archaeological district that overlaps the Alternative A project area. The remainder (83) are historic-period resources, including nine historic homesites, 61 historic period refuse deposits (HPRDs), eight wells, and five fence lines. All but one of the homesites are eligible for listing in the NRHP. None of the HPRDs, wells, or fencelines is eligible for NRHP listing. An additional six resources are missing documentation and are not included in the site types presented above, but are presumed eligible.

Alternative B EUL Study Area

A total of 73 cultural resources were recorded within the Alternative B solar field project area. Of these, 43 are prehistoric archaeological sites that are included in the Bissell Basin NRHP eligible prehistoric archaeological district. Thirty are historic period resources including two homesites, 22 HPRDs, and five fencelines, none of which are eligible for NRHP listing.

Gen-tie Route Options

A total of 21 cultural resources (not including isolates) have been previously recorded within or adjacent to the gen-tie route options. Of these, four are prehistoric archaeological sites, eight are historic period archaeological sites, and nine are historic period built environment resources. The following paragraphs discuss the resources according to each gen-tie route option.

A total of 16 cultural resources are documented within the East-West Gen-Tie route options (**Table 3.6-2**). All three East-West route options (Options A, B, and C) contain the same resources. The resources include: two prehistoric archaeological sites (P-15-014700 – lithic scatter and P-15-014701 – quarry or prospect site); five historic period archaeological sites (P-15-012716 – borrow pit and structural remains; and P-15-017096, P-15-017097, P-15-017098, and SS-S-11 – trash scatters); and nine built environment resources (P-15-003528 – an unnamed road; P-15-003534 – an unnamed road; P-15-3537 – Oak Creek Road; P-15-003549 – Los Angeles Aqueduct; P-15-3929 – Los Angeles-Owens River Road; P-15544 – a 1934 survey marker; P-15-017305 – State Route 14/Aerospace Highway; P-18681 – LADWP Owens Gorge 230kV transmission line; and P-15-002050/-003366/-000560/-017333 – Atchison Topeka and Santa Fe Railroad Line and associated spurs).

TABLE 3.6-1
RESOURCES WITHIN THE PROJECT AREA, ALTERNATIVES A AND B

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
TBD					
	EAFB-5150	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5157	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5198	Contributor	Unimpacted	No Effect	Unimpacted
	EAFB-6024	Contributor	A	Adverse Effect	Significant Impact
	EAFB-6025	Contributor	A	Adverse Effect	Significant Impact
	EAFB-6026	Contributor	A	Adverse Effect	Significant Impact
	EAFB-6027	Contributor	A	Adverse Effect	Significant Impact
Base Camp/Village					
	EAFB-4232	Contributor	A	Adverse Effect	Significant Impact
Flaking station					
	EAFB-0306	Not Contributor	A	No Effect	Unimpacted
	EAFB-3092	Not Contributor	A	No Effect	Unimpacted
	EAFB-4211	Not Contributor	A	No Effect	No Significant Impact
Large-dense lithic deposit					
	EAFB-0373	Not Contributor	A	Adverse Effect	Significant Impact
	EAFB-0422	Not Contributor	A	Adverse Effect	Significant Impact
	EAFB-0569	Contributor	A	Adverse Effect	Significant Impact
Large-dense temporary camp					
	EAFB-0385/3337	Contributor	A	Adverse Effect	Significant Impact
	EAFB-0426	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2262	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-4168	Contributor	A/B	Adverse Effect	Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-4191	Contributor	A/B	Adverse Effect	Significant Impact
Large-light lithic deposit					
	EAFB-0304	Not Contributor	A	No Effect	No Significant Impact
	EAFB-0427	Not Contributor	A	No Effect	No Significant Impact
	EAFB-0428	Not Contributor	A	No Effect	No Significant Impact
	EAFB-0429	Not Contributor	A	No Effect	No Significant Impact
	EAFB-0567/3050	Not Contributor	A	No Effect	No Significant Impact
	EAFB-0570	Contributor	A	Adverse Effect	Significant Impact
	EAFB-2247	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-2250	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-2251	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-2252	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-2255	Contributor	A/B	Adverse Effect	No Significant Impact
	EAFB-2263	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-2370	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2371	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-2372	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3151	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3153	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3154	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3157	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3158	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3160	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3165	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3166	Not Contributor	A	No Effect	No Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-3168	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3169	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3170	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3174	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3176	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3340	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3342	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3347	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3587	Contributor	A/B	Adverse Effect	No Significant Impact
	EAFB-3588	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-3592	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-3595	Contributor	Unimpacted	No Effect	Unimpacted
	EAFB-3599	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3634	Contributor	A	Adverse Effect	Significant Impact
	EAFB-3635	Contributor	A	Adverse Effect	Significant Impact
	EAFB-3637	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4169	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4171	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-4172	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4175	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4182	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4186	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4187	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4190	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4195	Contributor	A	Adverse Effect	Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-4202	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4205	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4212	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4213	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4215	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4218	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4222	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4224	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5138	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5139	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5140	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5142	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5143	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5144	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5153	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5154	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5156	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5158	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5161	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5162	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5163	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5165	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5166	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5171	Contributor	Unimpacted	No Effect	Unimpacted
	EAFB-5172	Contributor	A	Adverse Effect	Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-5173	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5174	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5176	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5178	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5180	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-5182	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5186	Contributor	Unimpacted	No Effect	Unimpacted
	EAFB-5187	Contributor	Unimpacted	No Effect	Unimpacted
	EAFB-5188	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5189	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5190	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5192	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5193	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5194	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5195	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5196	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5197	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5199	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5201	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5202	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5203	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5205	Not Contributor	A	No Effect	No Significant Impact
	EAFB-5206	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5207	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5209	Contributor	A	Adverse Effect	Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-5210	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5211	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5212	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5213	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5215	Contributor	A	Adverse Effect	Significant Impact
Large-light temporary camp					
	EAFB-0303	Contributor	A	Adverse Effect	Significant Impact
	EAFB-0374	Contributor	A	Adverse Effect	Significant Impact
	EAFB-0375/3339/4223	Contributor	A	Adverse Effect	Significant Impact
	EAFB-0562/3049/4199/5204	Contributor	A	Adverse Effect	Significant Impact
	EAFB-0568/4227/4229/5169	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-0571	Contributor	A	Adverse Effect	Significant Impact
	EAFB-0009/0632	Contributor	A	Adverse Effect	Significant Impact
	EAFB-1340/1342/3037	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-2240/0837	Contributor	A	Adverse Effect	Significant Impact
	EAFB-2243	Contributor	A/B	Adverse Effect	No Significant Impact
	EAFB-2244	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2249	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2253	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-2257/2264	Contributor	A/B	Adverse Effect	No Significant Impact
	EAFB-2258	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-2259	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-2261	Not Contributor	A/B	No Effect	No Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-2316	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-2367	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2368	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2369	Contributor	A	Adverse Effect	Significant Impact
	EAFB-2373	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-2377	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2378	Not Contributor	A	No Effect	No Significant Impact
	EAFB-2379	Contributor	A	Adverse Effect	Significant Impact
	EAFB-2380	Contributor	A	Adverse Effect	Significant Impact
	EAFB-2381	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-2402	Contributor	A	Adverse Effect	Significant Impact
	EAFB-3093	Not Contributor	Unimpacted	No Effect	Unimpacted
	EAFB-3116	Contributor	A	Adverse Effect	Significant Impact
	EAFB-3152	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-3161	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3162	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-3163	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3172	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3173	Contributor	A	Adverse Effect	No Significant Impact
	EAFB-3175	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3177	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3186	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3188	Contributor	A	Adverse Effect	Significant Impact
	EAFB-3594/4181	Contributor	A/B	Adverse Effect	No Significant Impact
	EAFB-3596	Contributor	A	Adverse Effect	No Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-3608	Contributor	A	Adverse Effect	Significant Impact
	EAFB-3636	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4170	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4173	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4174	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4177	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4180	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4183	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4188	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4192	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4193	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4196	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4197	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4198	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4200	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4201	Contributor	A	No Effect	No Significant Impact
	EAFB-4203	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4204	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4206	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4208	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4209	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4210	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4214	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4219	Contributor	A/B	Adverse Effect	Significant Impact4
	EAFB-4221	Contributor	A	Adverse Effect	Significant Impact4

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-4225	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4226	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4228	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4231	Contributor	A/B	Adverse Effect	Significant Impact
	EAFB-4233	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4234	Not Contributor	A	No Effect	No Significant Impact
	EAFB-4235/4240/4242	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4236	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4238	Contributor	A	Adverse Effect	Significant Impact
	EAFB-4239	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5145	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5151	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5164	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5200	Contributor	A	Adverse Effect	Significant Impact
	EAFB-5208	Contributor	A	Adverse Effect	Significant Impact
Milling Station					
	EAFB-2265	Contributor	A/B	Adverse Effect	No Significant Impact
	EAFB-3657	Contributor	A	Adverse Effect	Significant Impact
Single feature					
	EAFB-3094	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3171	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3346	Not Contributor	A	No Effect	No Significant Impact
	EAFB-4178	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-4189	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-4194	Not Contributor	A	No Effect	No Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-4241	Not Contributor	A	No Effect	No Significant Impact
	EAFB-5191	Not Contributor	A	No Effect	No Significant Impact
Small-dense lithic deposit					
	EAFB-3638	Contributor	A	No Effect	No Significant Impact
Small-light lithic deposit					
	EAFB-2254	Not Contributor	A/B	No Effect	No Significant Impact
	EAFB-3338	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3341	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3343	Not Contributor	A	No Effect	No Significant Impact
	EAFB-3344	Not Contributor	A	No Effect	No Significant Impact
	EAFB-5152	Not Contributor	A	No Effect	No Significant Impact
Homesite					
	EAFB-0005	Eligible	A	Adverse Effect	Significant Impact
	EAFB-0009/0632	Eligible	A	Adverse Effect	Significant Impact
	EAFB-0010	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-0016	Eligible	Unimpacted	No Effect	No Significant Impact
	EAFB-0017	Eligible	Unimpacted	No Effect	No Significant Impact
	EAFB-0023	Eligible	A	Adverse Effect	Significant Impact
	EAFB-0562/3049/4199/5204	Eligible	A	Adverse Effect	Significant Impact
	EAFB-0837/2240/1343	Eligible	A	Adverse Effect	Significant Impact
	EAFB-0838	Eligible	A	Adverse Effect	Significant Impact
	EAFB-0845	Eligible	A	Adverse Effect	Significant Impact
	EAFB-1346	Eligible	A/B	Adverse Effect	Significant Impact
HPRD					

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-0024	Not Eligible	A	No Effect	No Significant Impact
	EAFB-0395	Not Eligible	A	No Effect	No Significant Impact
	EAFB-0430	Not Eligible	A	No Effect	No Significant Impact
	EAFB-1038	Not Eligible	A	No Effect	No Significant Impact
	EAFB-2245	Not Eligible	A	No Effect	No Significant Impact
	EAFB-2260	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-2317	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-2382	Not Eligible	A	No Effect	No Significant Impact
	EAFB-2401	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3114/5167	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-3115	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3140	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3150	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3155	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3159	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3164	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-3167	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3187	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3530	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-3531	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-3589	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3590	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3593	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3598	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-3600	Not Eligible	Unimpacted	No Effect	Unimpacted

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-3601	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3602	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3603	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3605	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3606	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3650	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3655	Not Eligible	A	No Effect	No Significant Impact
	EAFB-4083	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-4179	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-4184	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-4185	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-4207	Not Eligible	A	No Effect	No Significant Impact
	EAFB-4216	Not Eligible	A	No Effect	No Significant Impact
	EAFB-4220	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-4230	Not Eligible	A	No Effect	No Significant Impact
	EAFB-4237	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5137	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5141	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5146	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-5147	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-5160	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5168	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-5175	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5177	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5179	Not Eligible	A	No Effect	No Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-5181	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5183	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5184	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5185	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5214	Not Eligible	A	No Effect	No Significant Impact
	EAFB-6097	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-5155	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5170	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-5216	Not Eligible	A/B	No Effect	No Significant Impact
Submodern HPRD					
	EAFB-3622	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3623	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3624	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3625	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3626	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3628	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-3629	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3631	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3632	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3633	Not Eligible	A	No Effect	No Significant Impact
	EAFB-4176	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-4217	Not Eligible	A	No Effect	No Significant Impact
Well-Isolated					
	EAFB-0004	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-0836	Not Eligible	A	No Effect	No Significant Impact

EAFB Site Typology	EAFB Number	NRHP Eligibility*	Alternative	Potential Effects Under NHPA	Potential Impacts Under CEQA
	EAFB-0839	Not Eligible	Unimpacted	No Effect	Unimpacted
	EAFB-0950	Not Eligible	A	No Effect	No Significant Impact
	EAFB-1037	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-1341	Not Eligible	A	No Effect	No Significant Impact
	EAFB-1344	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-1345	Not Eligible	A/B	No Effect	No Significant Impact
	EAFB-1347	Not Eligible	A/B	No Effect	No Significant Impact
Fenceline					
	EAFB-3652	Not Eligible	A	No Effect	No Significant Impact
	EAFB-3653	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5148	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5149	Not Eligible	A	No Effect	No Significant Impact
	EAFB-5159	Not Eligible	A	No Effect	No Significant Impact
NOTE: *, "Contributor" and "Not Contributor" refer to the resource's contribution to the NRHP significance of the Bissell Basin Archaeological District					

One resource, P-15-003549 (Los Angeles Aqueduct), has been determined eligible for listing in the NRHP and is listed in the CRHR. Further, both P-15-003929 (Los Angeles-Owens River Road) and P-15-002050/-003366/-000560/-017333 (Atchison, Topeka and Santa Fe Railroad Line and associated spurs) are considered likely eligible for the NRHP and CRHR (Hale et al., 2018), based on previous research. Two resources within the APE for the East-West gen-tie route options (P-15-012716 and SS-S-11) were evaluated as part of the studies conducted for the Proposed Action (Hale and Colston, 2019). Both were recommended not eligible for listing in the NRHP or CRHR. None of the remaining resources within the East-West gen-tie route options has been evaluated for listing in the NRHP or CRHR or as unique archaeological resources.

TABLE 3.6-2
RESOURCES WITHIN EAST-WEST GEN-TIE ROUTE OPTIONS A, B, AND C

Primary number (P-15-)	Description	NRHP/CRHR Eligibility	Potential Effects Under NHPA	Potential Impacts Under CEQA
002050/003366/ 000560/017333	Historic-period resource: Atchison, Topeka and Santa Fe Railroad line and associated spurs	Unevaluated but likely NRHP- and CRHR-eligible	No Effect	No Significant Impact
003528	Historic-period resource: unnamed dirt road	Not evaluated	No Effect	No Significant Impact
003534	Historic-period resource: unnamed dirt road	Not evaluated	No Effect	No Significant Impact
003537	Historic-period resource: Oak Creek Road	Not evaluated	No Effect	No Significant Impact
003549	Historic-period resource: Los Angeles Aqueduct	NRHP-eligible/CRHR-listed	No Effect	No Significant Impact
003929	Historic-period resource: Los Angeles-Owens River Road	Unevaluated but likely NRHP- and CRHR-eligible	No Effect	No Significant Impact
012716	Historic-period archaeological site: borrow pit and structural remains	Not eligible for CRHR or NRHP	No Effect	No Significant Impact
014700	Prehistoric archaeological site: lithic scatter	Not evaluated		
014701	Prehistoric archaeological site: quarry or prospect	Not evaluated	No Effect	No Significant Impact
015554	Historic-period resource: 1935 survey marker	Not evaluated	No Effect	No Significant Impact
017096	Historic-period archaeological site: trash scatter	Not evaluated	No Effect	No Significant Impact
017097	Historic-period archaeological site: trash scatter	Not evaluated	No Effect	No Significant Impact
017098	Historic-period archaeological site: trash scatter	Not evaluated	No Effect	No Significant Impact
017305	Historic-period resource: State Route 14/Aerospace Highway	Not evaluated	No Effect	No Significant Impact
018681	Historic-period resource: LADWP Owens Gorge 230kV transmission line	Not evaluated	No Effect	No Significant Impact
SS-S-11	Historic-period archaeological site: trash scatter	Not eligible for CRHR or NRHP	No Effect	No Significant Impact

A total of four cultural resources are documented within North-South Gen-Tie Option 1 (**Table 3.6-3**). These include: two prehistoric archaeological sites, both lithic scatters (SS-S-10 and SS-S-30); one historic period trash scatter (SS-S-23); and one built environment resource (P-15-002050/-003366/-000560/-017333 – the Atchison, Topeka, and Santa Fe Railroad and associated spurs). P-15-002050/-003366/-000560/-017333 also occurs in the East-West Gen-Tie route options. As mentioned above, P-15-002050/-003366/-000560/-017333 (Atchison, Topeka and Santa Fe Railroad Line and associated spurs) is considered likely eligible for the NRHP and CRHR (Hale et al., 2018), based on previous research. The remaining three resources were evaluated as part of the studies conducted for the Proposed Action (Hale and Colston, 2019). SS-S-23 and SS-S-30 were recommended not eligible for listing in the NRHP or CRHR. SS-S-10 was recommended eligible for listing in the NRHP and CRHR, but the study concluded that the portion of the resource within the APE does not contain significant archaeological deposits, and impacts to that portion would not constitute a significant impact.

TABLE 3.6-3
RESOURCES WITHIN NORTH-SOUTH GEN-TIE ROUTE OPTION 1

Primary number (P-15-)	Description	NRHP/CRHR Eligibility	Potential Effects Under NHPA	Potential Impacts Under CEQA
002050/003366/ 000560/017333	Historic-period resource: Atchison, Topeka and Santa Fe Railroad line and associated spurs	Unevaluated but likely NRHP- and CRHR-eligible	No Effect	No Significant Impact
SS-S-10	Prehistoric archaeological site: lithic scatter	Portion within APE not eligible for CRHR or NRHP	No Effect	No Significant Impact
SS-S-23	Historic-period archaeological site: trash scatter	Not eligible for CRHR or NRHP	No Effect	No Significant Impact
SS-S-30	Prehistoric archaeological site: lithic scatter	Not eligible for CRHR or NRHP	No Effect	No Significant Impact

A total of two resources are documented within North-South Gen-Tie Option 2 (**Table 3.6-4**). These consist of two historic period trash scatters (P-15-13801 and P-15-13802). Both were evaluated as part of the studies conducted for the Proposed Action (Hale and Colston, 2019), and both were recommended not eligible for listing in the NRHP or CRHR.

TABLE 3.6-4
RESOURCES WITHIN NORTH-SOUTH GEN-TIE ROUTE OPTION 2

Primary number (P-15-)	Description	NRHP/CRHR Eligibility	Potential Effects Under NHPA	Potential Impacts Under CEQA
013801	Historic-period archaeological site: trash scatter	Not eligible for CRHR or NRHP	No Effect	No Significant Impact
013802	Prehistoric archaeological site: lithic scatter	Not eligible for CRHR or NRHP	No Effect	No Significant Impact

Prehistoric Archaeological District

The CRM has used its discretion as the Section 106 lead authority to determine that the prehistoric archaeological sites identified within the Proposed Action alternatives (excluding the gen-tie routes) constitute an NRHP-eligible archaeological district, the Bissell Basin Archaeological District. An archaeological district is "a grouping of sites, buildings, structures, or objects that are linked historically by function, theme, or physical development or aesthetically by plan" (National Register Bulletin 36, 1993). The prehistoric archaeological sites identified in the Proposed Action alternatives for the solar field meet the criteria to be managed as an archaeological district because they constitute a grouping of sites linked in time by the functions and themes related to aboriginal occupation of the Bissell Basin.

Extensive and relatively recent archaeological research has been completed in portions of the Bissell Basin region where the proposed Alternatives A and B solar fields are located. This includes research conducted for unrelated projects (Giambastiani and Basgall 2000, Giambastiani et al. 2006, Giambastiani et al. 2007, and Hale et al. 2010), and project specific research (ECORP 2013, Hale and Denniston 2017, Hale and Colston 2019, and Red Horse 2019). The Air Force consulted with the San Manuel Band of Mission Indians, Tejon Indian Tribe, and archaeological contractors from Red Horse and Dudek to determine which individual archaeological sites in the APE are contributors to the NRHP-eligible Bissell Basin Archaeological District. These determinations were documented by Hale and Colston (2019) for the Bissell Basin Archaeological District.

For archaeological values, the Bissell Basin Archaeological District is eligible for NRHP listing for its scientific value (Criterion D under the NRHP; Criterion 4 under CEQA). The Tejon Indian Tribe and San Manuel Band of Mission Indians both indicated that the archaeological values also reflect part of the values each tribe places in the District. For example, both tribal communities expressed a great desire to learn more about how their respective ancestors uniquely utilized the Bissell Basin landscape via archaeological, geomorphological and paleoenvironmental studies. As such, in this instance archaeological values do not contradict or compete with Tribal values, but rather complement them. Additionally, based on other tribal values, certain characteristics of archaeological sites contribute to the District's significance under other NRHP criteria. According to the consulting tribes, certain shell and stone beads or ornaments, and artifacts whose deposition is viewed as symbolic in nature, convey significance under Criterion A of the NRHP and Criterion 1 of the CRHR relating to significant events in prehistory. Such events could have included

ceremonial activities, including funerary rites and r other activities related to disposition of the dead. These same artifacts also embody special artistic and symbolic value, contributing to the District's significance under Criterion C of the NRHP and Criterion 3 of the CRHR.

Historic Period Refuse Deposits

The CRM has determined that all of the HPRDs located in the Proposed Action alternatives (excluding the gen-tie alternatives) are not eligible for NRHP listing. Enough research on HPRDs has been completed in the general vicinity of the project and across Edwards AFB as a whole that no further work is necessary at recorded HPRDs in the Proposed Action alternatives for the solar field. None of the sites contains information that would add value to historic research themes identified in the historic thematic contexts developed for the installation (Puckett and Peyton, 2008).

Correspondence with Native American Tribes (including Section 106 Government to Government Consultation)

The Air Force has corresponded with Native American Tribes and is also conducting Native American consultation efforts to satisfy NHPA and other federal requirements. The Air Force consults with Federally Recognized Tribes on a government-to-government basis in accordance with several authorities including NEPA, the NHPA, the American Indian Religious Freedom Act, and Executive Order 13007. Under Section 106 of the NHPA, the Air Force consults with Federally Recognized Tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on historic properties important to these tribal communities that may be affected by Edwards AFB's undertakings. Appendix A4 provides a list of all tribes to whom Edwards AFB provided official memoranda regarding the Proposed Action.

In July 2011, Edwards AFB sent letters via certified mail to the following tribal organizations:

- Big Pine Paiute Tribe of the Owens Valley
- Bishop Paiute Tribe
- Fort Mojave Indian Tribe
- Fort Mojave Indians
- Las Vegas Paiute Tribe
- Lone Pine Paiute-Shoshone Tribe
- Kern Valley Indian Council
- Kitanemuk and Yowlumne Tejon Indians
- Moapa Band of Paiute Indians
- San Fernando Band of Mission Indians
- San Manuel Band of Mission Indians
- Serrano Nation of Indians
- Tehachapi Indian Tribe

- Tejon Indian Tribe
- Timbisha Shoshone Tribe
- Tubatulabals of Kern Valley
- Tule River Tribe
- Ron Wermuth

On June 7, 2012, Edwards AFB sent follow-up emails to tribal organizations requesting confirmation of the receipt of the 2011 letter, to update the tribal organization regarding the current progress of the project, and to continue to invite any comments, questions, or concerns regarding the project. Email addresses could not be obtained for the San Manuel Band of Mission Indians, the Serrano Nation of Indians, or Ron Wermuth. One response was received as a result of the 2012 outreach.

In a letter dated June 8, 2012, Dr. Donna Miranda-Begay, Tribal Chairwoman of the Tubatulabal Tribe, stated there are recorded sites near and on the proposed project sites and recommended cultural resources monitoring.

On October 1, 2014, Edwards AFB sent letters to the following Federally Recognized Tribes as part of its government-to-government consultation responsibilities:

- Big Pine Paiute Tribe of the Owens Valley
- Bishop Paiute Tribe
- Chemehuevi Indian Tribe
- Colorado River Indian Tribes
- Fort Independence Indian Community of Paiute Indians
- Fort Mojave Indian Tribe
- Las Vegas Paiute Tribe
- Lone Pine Paiute-Shoshone Tribe
- Moapa Band of Paiute Indians
- Morongo Band of Mission Indians
- San Manuel Band of Mission Indians
- Santa Rosa Rancheria Tachi-Yokut
- Timbisha Shoshone Tribe
- Tule River Tribe

The purpose of the letters was to alert the tribal organizations to the specific details of the Proposed Action and ask if any cultural resources or Traditional Cultural Properties would be affected by the proposed undertaking. As of October 22, 2014, Edwards AFB had received two responses to the 2014 government-to-government consultation letters.

In a letter dated October 21, 2014, Robert Martin, Chairman of the Morongo Band of Mission Indians, stated the project is outside of the Tribe's current reservation boundaries but within an area that is considered a traditional use area or one in which the Tribe has cultural ties (e.g., Cahuilla/Serrano territory). Chairman Martin requested that if human remains are encountered stop-work measures be enacted and the County Coroner contacted in accordance with State Health and Safety Code 7050.5; that if Native American cultural resources are encountered, stop-work measures be enacted and a qualified archaeologist meeting the Secretary of the Interior's Standards be retained to assess the find; and that if significant Native American cultural resources are discovered and a treatment plan is required, the developer or qualified archaeologist must contact the Morongo Band of Mission Indians.

In addition to Native American consultation, consultation letters were sent by Edwards AFB to the California SHPO on October 7, 2014, and the ACHP on October 17, 2014, requesting comments on the delineation of the APE, appropriateness of the historic property identification efforts, and eligibility determinations.

In 2015 the Air Force terminated negotiation with the developer previously selected to build the project. After terminating negotiation, the Air Force completed a feasibility study for the project and, in February 2017, released a Request for Qualifications soliciting new project developers.

On December 14, 2016 Colin Rambo, Cultural Resource Management Technician for the Tejon Indian Tribe, requested Consulting Party Status on the project.

On January 5, 2017, Edwards AFB provided correspondence to the following Federally Recognized Tribes to communicate initial planning for the project had resumed:

1. Big Pine Paiute Tribe of the Owens Valley
2. Bishop Paiute Tribe
3. Chemehuevi Indian Tribe
4. Colorado River Indian Tribes (CRIT)
5. Fort Independence Paiute Indians
6. Fort Mojave Indian Tribe
7. Las Vegas Paiute Tribe
8. Lone Pine Paiute-Shoshone Tribe
9. Moapa Band of Paiutes
10. Morongo Band of Mission Indians
11. San Manuel Band of Mission Indians
12. Tachi-Yokut Tribe
13. Tejon Indian Tribe
14. Timbisha Shoshone Tribe
15. Tule River Tribe

On March 4, 2017 Lee Clauss, Director of the Cultural Resources Management Department of the San Manuel Band of Mission Indians, requested consultation with the Air Force on the project. A meeting was subsequently held at Edwards AFB in April 2017 to discuss the project and other matters of concern to the Tribe.

On August 17, 2017 Anita Flores of the Colorado River Indian Tribe (CRIT) requested a meeting between Edwards AFB and Brian Etsitty, Tribal Historic Preservation Office Director for the Colorado River Indian Tribe. Edwards AFB personnel met with representatives of the Colorado River Indian Tribe Historic Preservation Office at the CRIT offices in Parker, AZ on September 18, 2017.

On November 27, 2017, the following Federally Recognized Tribes were provided the Notice of Intent to Prepare an Environmental Impact Statement and Environmental Impact Report for the Edwards Air Force Base Solar Enhanced Use Lease Project:

1. Big Pine Paiute Tribe of the Owens Valley
2. Bishop Paiute Tribe
3. Chemehuevi Indian Tribe
4. Colorado River Indian Tribes (CRIT)
5. Fort Independence Paiute Indians
6. Fort Mojave Indian Tribe
7. Las Vegas Paiute Tribe
8. Lone Pine Paiute-Shoshone Tribe
9. Moapa Band of Paiutes
10. Morongo Band of Mission Indians
11. San Manuel Band of Mission Indians
12. Santa Rosa Rancheria Tachi-Yokut Tribe
13. Tejon Indian Tribe
14. Timbisha Shoshone Tribe
15. Tule River Tribe

In a letter dated January 2, 2018, Lee Clauss, Director of the Cultural Resources Management Department of the San Manuel Band of Mission Indians requested continued consultation with Edwards AFB and the County of Kern on matters of great archaeological sensitivity and on their cultural-resources-based concerns.

On March 27, 2018, Edwards AFB hosted a government-to-government consultation meeting to discuss project engagement and to support information exchange. During this meeting, representatives from the San Manuel Band of Mission Indians and Tejon Indian Tribe indicated their preference for an archaeological district approach to resources management to capture the themes that link together the prehistoric sites, and to enter into a Memorandum of Agreement

with the Air Force regarding the treatment of archaeological resources. The meeting included the following participants:

1. Lee Clauss – San Manuel Band of Mission Indians
2. Jessica Mauck – San Manuel Band of Mission Indians
3. Tommy Gonzales – Tejon Indian Tribe
4. Colin Rambo – Tejon Indian Tribe
5. Andrea Brewer-Anderson – U.S. Department of the Air Force
6. Cliff Knesel – U.S. Department of the Air Force
7. Tom Rademacher – U.S. Department of the Air Force
8. Joe Thomas – U.S. Department of the Air Force
9. Martin Briseno – U.S. Department of the Air Force
10. Leslie Brown – U.S. Department of the Air Force
11. Patricia Rodriguez – U. S. Department of the Air Force
12. Terrance Smalls – County of Kern
13. Janice Mayes – County of Kern
14. Taylor Shoene – County of Kern
15. Simon Day – Terra-Gen, LLC
16. Bernadette Jendrusch – Terra-Gen, LLC
17. Jessica Porter-Rodriguez – Redhorse, LLC

On April 24, 2018, a tribal consultation meeting was held at Edwards AFB to discuss identification and evaluation efforts for cultural resources, to gain information on resources important to tribes, and to conduct visitation of certain resources. While representatives from the Tejon Indian Tribe were present, representatives from the San Manuel Band of Mission Indians could not attend the meeting, so a subsequent field visit was arranged. That meeting included the following participants:

1. Tom Rademacher – U.S. Department of the Air Force
2. Cliff Knesel – U.S. Department of the Air Force
3. Andrea Brewer-Anderson – U.S. Department of the Air Force
4. Colin Rambo – Tejon Indian Tribe
5. Tommy Gonzales – Tejon Indian Tribe
6. Jessica Porter-Rodriguez – Redhorse Corporation
7. Jeffrey Baker – Redhorse Corporation
8. Simon Day – Terra-Gen, LLC
9. Bernadette Jendrusch – Terra-Gen, LLC
10. Micah Hale – Dudek

11. Randall Cates – Kern County Planning and Natural Resources Department
12. Taylor Schoene – Kern County Planning and Natural Resources Department
13. Jay Scott Wolf – Dudek

A field visit with representatives from the San Manuel Band of Mission Indians was held on June 11, 2018. The field visit was attended by the following representatives:

1. Tom Rademacher – U.S. Department of the Air Force
2. Cliff Knesel – U.S. Department of the Air Force
3. Andrea Brewer-Anderson – U.S. Department of the Air Force
4. Lee Clauss – San Manuel Band of Mission Indians
5. Jessica Mauck – San Manuel Band of Mission Indians
6. Colin Rambo – Tejon Indian Tribe
7. Jessica Porter-Rodriguez – Redhorse Corporation
8. Jeffrey Baker – Redhorse Corporation
9. Bernadette Jendrusch – Terra-Gen, LLC
10. Jay Scott Wolf – Dudek
11. Randall Cates – Kern County Planning and Natural Resources Department
12. Taylor Schoene – Kern County Planning and Natural Resources Department

On October 23, 2018, a working consultation meeting was held at Edwards AFB. During the meeting specific sites were considered and prioritized for further evaluation. The meeting was attended by the following representatives:

1. Lee Clauss – San Manuel Band of Mission Indians
2. Jessica Mauck – San Manuel Band of Mission Indians
3. Colin Rambo – Tejon Indian Tribe
4. Simon Day – Terra-Gen, LLC
5. Bernadette Jendrusch – Terra-Gen, LLC
6. Gary Stuebben – U.S. Department of the Air Force
7. Debra Felder – U.S. Department of the Air Force
8. Martin Briseno – U.S. Department of the Air Force
9. Micah Hale – Dudek
10. Jessica Porter-Rodriguez – RedHorse
11. Jeffery Baker – RedHorse
12. James Papin – U.S. Department of the Air Force
13. Cliff Knesel – U.S. Department of the Air Force
14. Andrea Brewer-Anderson – U.S. Department of the Air Force

15. Thomas Rademacher – U.S. Department of the Air Force

Native American AB 52 Consultation

The consultation conducted by the County under AB 52 pertains to the CEQA component of the project, and specifically the gen-tie route options. On November 27, 2017, the County mailed AB 52 consultation notification letters to Native American groups and individuals identified on the County's AB 52 consultation list. The contact list included four tribal representatives from three tribes: Torres Martinez Desert Cahuilla Indians, San Manuel Band of Mission Indians, and Twenty-Nine Palms Band of Mission Indians. The notification letter provided details on the project, a map of the project site, and an invitation to consult.

On December 13, 2017, Ms. Jessica Mauck, Cultural Resources Analyst with the San Manuel Band of Missions Indians, responded by email stating that the project lies within Serrano ancestral territory and is therefore of interest to the Tribe. The email also notes that the San Manuel Band of Mission Indians is already consulting with Edwards AFB for the portion of the project within the base, and therefore also elects to consult under CEQA with the County. The Tribe requested copies of the cultural resources technical reports for the gen-tie route options for review. On December 18, 2017, the County submitted the gen-tie route options cultural resources report (Dudek, 2017) to the Tribe.

On January 18, 2018, Mr. Anthony Madrigal, Jr., Tribal Historic Preservation Officer (THPO) with the Twenty-Nine Palms Band of Mission Indians, replied by letter stating that while the THPO is not aware of any resources within the project area that pertain to the Twenty-Nine Palms Band of Mission Indians, the project may have the potential to significantly impact resources of concern to the Tribe. The Tribe further requested that they be allowed to review the cultural resources technical reports for the project, and be informed of the distribution of the EIS/EIR. The County submitted the cultural resources technical reports to the tribe on January 30, 2018.

Further consultation efforts between the County and the San Manuel Band of Mission Indians and the Tejon Indian Tribe, conducted in coordination with Edwards AFB's consultation under Section 106, are described in the preceding section, *Native American and Section 106 Consultation*. These efforts included meetings hosted by Edwards AFB on March 27, 2018, and April 24, 2018, and a field visit on June 11, 2018, all of which included the participation of County representatives.

Paleontological Resources

A paleontological records check and geologic map review for the project area was performed through the LACM (McLeod, 2014; Appendix B6). A project-specific paleontological locality search was conducted through LACM and included a review of geological and paleontological records for the project area and any known paleontological resources recovered from the surrounding area, as well as the geologic units that would likely be encountered during excavation activities associated with the project. The locality search from the LACM records did not identify any vertebrate fossil localities within the project boundaries, but it did identify localities from sedimentary deposits nearby that appear similar to those occurring within the project area. Along the southeastern portion of the project area, in the elevated terrain of the Bissell Hills, there are bedrock exposures of plutonic igneous rocks that will not contain any recognizable fossils. Smaller

exposures of plutonic igneous rocks are noted in elevated terrain around Standard Hill (near the middle of the project area) and closer to Highway 14/Antelope Valley Freeway. Generally, these areas contain exposures of early to middle Miocene Gem Hill Formation, which is described as "a coarse rock unit composed of igneous rock fragments" and is considered unlikely to contain significant vertebrate fossils (McLeod, 2014).

The closest vertebrate fossil locality was identified as LACM 7891, recorded in Quaternary deposits to the southwest of the western portion of the project area between the Tehachapi Mountains and the Rosamond Hills, in a location north of Willow Springs, near the California Aqueduct. This locality produced fossil specimens of camel (*Hemiauchenia*). Vertebrate fossil locality LACM 3722 is situated to the west-northwest of the western portion of the project area. This fossil horse (*Equus*) was identified in Quaternary localities during the excavation of sewer lines within the city of Tehachapi. Vertebrate fossil locality LACM 7853 is situated south of the project site and north-northeast of Lancaster. This locality produced fossil specimens of western whiptail lizard (*Aspidocelis tigris*), desert iguana (*Dipsosaurus dorsalis*), alligator lizard (*Elgaria*), desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), desert night lizard (*Xantusia vigilis*), skink (*Plestiodon* sp.), coachwhip or whip snake (*Masticophis*), leaf-nosed snake (*Phyllorhynchus* sp.), western lyre snake (Trimorphodon *biscutatus*), wood rat (*Neotoma* sp.), field or deer mouse (*Peromyscus* sp.), pocket gopher (*Thomomys bottae*), kangaroo rat (*Dipodomys* sp.), pocket mouse (*Perognathus* sp.), Audubon's cottontail rabbit *(Sylvilagus audubonii*), and antelope ground squirrel (*Ammospermophilus leucurus*). All of these animals are contemporaneous with modern species and are likely from Holocene sediments. Further south of the project area, but north of Lancaster, is vertebrate fossil locality LACM 7884. This location produced a fossil specimen of camel (*Camelops hesternu*s), which is from Pleistocene sediments and is older than 11,700 years.

Much of the project area features surficial deposits of Quaternary alluvium derived from the Tehachapi Mountains to the northwest of the Proposed Action location. The uppermost layers of these alluvial fan deposits are unlikely to contain significant vertebrate fossils, although there is a potential for these remains in the finer-grained dune sands. As a result, surface grading or shallow excavation in the younger Quaternary alluvium that underlies the project area is unlikely to uncover significant vertebrate fossils. Deeper excavations that extend down into older deposits, however, may encounter significant vertebrate fossil remains (McLeod, 2014).

3.6.2.2 Determination of Impacts/Thresholds of Significance

This effects analysis assesses potential effects on cultural, tribal cultural, and paleontological resources, and human remains, that could occur as a result of implementation of the Proposed Action. This analysis evaluates the effects of constructing and operating a photovoltaic generating facility on the project site, as well as the proposed gen-tie line routes.

The effects and mitigation measures identified in this section address types of activities that could significantly affect cultural resources. The Proposed Action could include elements such as ground disturbance, grading, placement of pipe pile foundations, and placement of footings, that have the ability to damage or create the loss of cultural resources and paleontological resources. Ground-disturbing construction activities associated with the development of the Proposed Action or

alternatives could have a direct effect on cultural resources, historic properties, historical resources, and unique archaeological resources by damaging and displacing artifacts, diminishing site integrity and altering the characteristics that make the resources significant.

Indirect effects are caused by the action and are later in time or farther removed in distance. Indirect effects to historical and unique archaeological resources could include visual, auditory, and atmospheric effects. For significant cultural resources—including built environment, archaeological, and tribal resources—for which setting, feeling and association are aspects of integrity that are critical to conveying their historical significance, indirect effects could include alteration of those characteristics of such resources that convey their historical significance. Indirect effects to resources may also result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility.

Effects on paleontological resources occur when there is a loss of resources directly or a loss of a unique geologic feature associated with paleontological resources.

For this analysis, an environmental effect to cultural and paleontological resources would be considered significant if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

NEPA

Under NEPA, in determining whether a federal action "significantly" affects the quality of the human environment, federal lead agencies consider the unique characteristics of the affected geographic area, such as proximity to "historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, and ecologically critical areas" (40 CFR Section 1508.27(b)(3)), or the degree to which the action may adversely affect "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" or may cause loss or destruction of "significant scientific, cultural, or historical resources" (40 CFR Section 1508.27(b)(8)).

Cultural resources need not be determined eligible for the National Register to receive consideration under NEPA. NEPA requires consideration of effects to both National Register-eligible resources and to "cultural resources" more broadly (40 CFR Section 1508.27(b)(3); 40 CFR Section 1508.27(b)(8)).

As indicated by Section 3.0.4, the following criteria were used to determine the context and intensity of effects under NEPA:

1. The complete scope of the undertaking, including the location and amount of ground-disturbing activities, and their potential for affecting known or unknown cultural resources, or areas of importance to Native American or other traditional communities.
2. The presence of or potential for cultural resources within the Proposed Action.

3. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.
4. Options for the mitigation of the adverse effects to known significant cultural resources or paleontological resources.
5. The potential for inadvertent discoveries or inadvertent destruction of resources through the course of the project (including construction, operation, maintenance, and decommissioning).

CEQA

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in Appendix G of the CEQA Guidelines, to determine if a project could potentially have a significant adverse effect on cultural resources or tribal cultural resources:

- Cause a substantial adverse change in the significance of a historical resource, pursuant to Section 15064.4.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.4.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.4.
- Disturb any human remains, including those interred outside of formal cemeteries
- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is either of the following:
  a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or
  b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

According to CEQA Guidelines Section 5064.5(b), a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. The guidelines further state that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historic resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of Public Resources Code Sections 5020.1(k) and 5024.1(g).

Finally, CEQA Guidelines Section 15125.4(b)(3) requires consideration of avoidance of impacts to significant or unique archaeological sites through one of the following: (1) avoidance, (2) incorporation into a park or greenspace, (3) capping with chemically stable soil before covering over with hardscape, or (4) deeding into a conservation easement.

3.6.3 Analysis of Environmental Effects

3.6.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

This discussion of Alternative A is specific to the construction, operation, and decommissioning of the solar arrays and related components that would be constructed within the EUL Study Area as well as the gen-tie line associated with Alternative A. Mitigation measures identified here are presented in Section 3.6.5, *Mitigation Measures*. The Alternative A APE is 4,700 acres, within which 4,000 acres can be developed. The additional 700 acres was included to identify areas for solar development while simultaneously allowing for avoidance of significant cultural resources.

NEPA: Environmental Impacts

Construction

Cultural Resources

Construction of a solar array within the EUL Study Area under Alternative A would require clearing and grading of a maximum of 4,000 acres of mostly undisturbed land on Edwards AFB. Approximately 150 acres of disturbed and undisturbed lands would be graded or otherwise disturbed for construction of the gen-tie line. This grading could directly affect known cultural resources within the project area by damaging or displacing artifacts and features, resulting in a loss of information about history and prehistory in the area. Construction of Alternative A also has the potential for indirect effects to known cultural resources, including effects created by erosion, dust, and surface runoff. These effects would be considered significant if erosion, dust, or surface runoff creates an unstable ground surface that would undermine or displace cultural materials or otherwise damage the cultural resources.

The Alternative A site was designed to avoid several significant archaeological resources located along the western and northern installation boundaries and within the overall EUL area. The following summary of cultural resources includes those that are in or intersected by the Alternative A site (APE), and excludes those that are completely avoided. A total of 298 cultural resources were recorded within the Alternative A site area. Of these, 215 are prehistoric archaeological sites that are included in the Bissell Basin NRHP eligible prehistoric archaeological district that overlaps the Alternative A project area. The remainder (83) are historic-period resources, including nine historic homesites, 61 HPRDs, eight wells, five fence lines, and six resources that lack documentation and do not fit into the site typology. Eight of the homesites are eligible for listing in the NRHP, as are the undocumented resources. None of the HPRDs, wells, or fence lines is eligible for NRHP listing. Through consultation, the California SHPO has concurred on the Air Force finding of adverse effect, the eligibility determinations, and the APE. The Air Force and California SHPO are currently working to finalize a Memorandum of Agreement (MOA) for the project.

The Bissell Basin Archaeological District is eligible for NRHP listing under Criterion A, C, and D, and for the CRHR under criteria 1, 3, and 4 for both archaeological and tribal values, which as previously denoted are not mutually exclusive.

A total of 16 cultural resources are documented within the East-West Gen-Tie route options. All three East-West route options (Options A, B, and C) contain the same resources. The resources include: two prehistoric archaeological sites (P-15-014700 – lithic scatter, and P-15-014701 – quarry or prospect site); five historic period archaeological sites (P-15-012716 – borrow pit and structural remains; and P-15-017096, P-15-017097, P-15-017098, and SS-S-11 – trash scatters); and nine built environment resources (P-15-003528 – an unnamed road; P-15-003534 – an unnamed road; P-15-3537 – Oak Creek Road; P-15-003549 – Los Angeles Aqueduct; P-15-3929 – Los Angeles-Owens River Road; P-15544 – a 1934 survey marker; P-15-017305 – State Route 14/Aerospace Highway; P-15-018681 – LADWP Owens Gorge 230kV transmission line; and P-15-002050/-003366/-000560/-017333 – Atchison, Topeka and Santa Fe Railroad Line and associated spurs). One resource, P-15-003549, has been determined eligible for listing in the NRHP and is listed in the CRHR. Two resources, P-15-003929 and P-15-002050/-003366/-000560/-017333, are considered likely eligible for the NRHP and CRHR and are assumed eligible for purposes of the Proposed Action. An additional two resources, P-15-012716 and SS-S-11, have been recommended not eligible for listing in the NRHP or CRHR. The remaining 11 resources have not been evaluated for listing in the NRHP or CRHR or as unique archaeological resources, and so are assumed to be significant resources for purposes of the Proposed Action.

Of these 14 determined, recommended, or assumed eligible resources, eight are linear historic period features, including an aqueduct (P-15-003549), a transmission-line (P-15-018681), a railroad (P-15-002050/-003366/-000560/-017333), and five roads or highways (P-15-003929, P-15-003528, P-15-003534, P-15-003537, and P-15-017305). These resources cross the APE, but construction of the transmission towers for the gen-tie line would avoid the resources themselves, and the transmission line would span the resources. As such, they would not be impacted by the Proposed Action. The six remaining resources include two prehistoric archaeological sites, three historic period trash scatters, and one survey marker. While these resources occur within the APE, flexibility in the siting of the transmission line towers can avoid direct impacts to the resources. That said, because these determined, recommended, or assumed eligible resources occur within the APE, implementation of any of the East-West Gen-Tie options has the potential to impact cultural resources.

A total of four cultural resources are documented within North-South Gen-Tie Option 1. These include: two prehistoric lithic scatters (SS-S-10 and SS-S-30); one historic period trash scatter (SS-S-23); and one built environment resource (P-15-002050/-003366/-000560/-017333 – the Atchison, Topeka and Santa Fe Railroad and associated spurs). SS-S-23 and SS-S-30 have been recommended not eligible for listing in the NRHP or CRHR, and impacts to the resources would not be considered significant. Based on testing and evaluation, SS-S-10 was recommended eligible for listing in the NRHP and CRHR, but the portion of the resource within the APE was found to not contain significant archaeological deposits that contribute to the eligibility of the resource. As such, impacts to the portion of the resource within the APE would not be a significant impact. Finally, P-15-002050/-003366/-000560/-017333, which also occurs within the APE for the East-

West route options, is considered likely eligible for the NRHP and CRHR and is assumed eligible for purposes of the Proposed Action. P-15-002050/-003366/-000560/-017333 is a linear historic period resource that crosses the APE and can be avoided by the proposed gen-tie line. As such, impacts to the resource can be avoided. That said, because two recommended or assumed eligible resources occur within the APE, without appropriate avoidance measures implementation of North-South Gen-Tie Option 1 has the potential to impact cultural resources,

A total of two resources are documented within North-South Gen-Tie Option 2, both of which are historic period trash scatters (P-15-13801 and P-15-13802). Both have been recommended not eligible for listing in the NRHP or CRHR. As such, implementation of North-South Gen-Tie Option 2 would not have an impact on cultural resources.

Given the results of this analysis, Alternative A has the potential to adversely affect cultural resources both within the solar facility and along the proposed gen-tie routes, including resources eligible for the NRHP and CRHR. If Alternative A is approved, the following would occur:

- The project would have an adverse effect on the Bissell Basin Archaeological District where impacts occur to individual archaeological sites that are considered to be contributors to the District's NRHP significance under Criterion A, C, and D for archaeological and tribal values. Impacts to individual prehistoric archaeological sites that are not contributors to Bissell Basin Archaeological District would not constitute an adverse effect.
- The project would have an adverse effect on all NRHP-eligible historic-period archaeological sites that cannot be avoided.
- Individual HPRDs, wells, and fence lines are categorically considered not significant and not eligible for NRHP listing; implementation of Alternative A would not have an adverse effect on these resources.

Regarding the gen-tie route options, the Proposed Action would, with appropriate resource avoidance measures, avoid adverse effects to known cultural resources that qualify as historic properties.

In addition to known cultural resources, ground-disturbing activities associated with the project could have an effect on unknown buried cultural resources, which could be a significant effect. The Antelope Valley floor is covered in thick deposits of Quaternary alluvial sediments, derived from nearby granitic mountains and deposited on the valley floor over the course of thousands of years. The younger Quaternary valley alluvial deposits, composed of weathered soil material and poorly sorted clay, silt, and sand, may be up to several hundred feet thick in valley areas, and thinner on slopes at the valley margins. The precise thickness of the younger alluvial deposits within the project area is unknown.

Given that these portions of the Antelope Valley within which the project would be located have been covered with Holocene alluvial deposits, which have been deposited over the course of known human occupation in the region, there is a possibility that the deposition of alluvium has buried prehistoric archaeological sites that once existed on the surface. In fact, Giambastiani and Basgall (2000) document buried archaeological deposits within the EUL. Therefore, there is a moderate

probability that buried archaeological deposits may be encountered during project-related excavation.

The provided mitigation to resolve adverse effects to the Bissell Basin Archaeological District is designed to address both archaeological and tribal values where those values intersect under Criterion D of the NRHP and Criterion 4 of the CRHR. Additional mitigation is provided to resolve adverse effects to tribal values primarily under Criterion A and C of the NRHP and Criterion 1 and 3 of the CRHR.

Mitigation measures MM 3.6-1a through MM 3.6-7a would mitigate adverse effects under Criterion D of the NRHP to the Bissell Basin Archaeological District where effects to contributing elements cannot be avoided. Implementation of MM 3.6-1a, Memorandum of Agreement (MOA) between the CRM, consulting tribes, and the California SHPO will further specify details of all mitigation measures. The MOA will require implementation of a historic properties treatment plan (HPTP) that will identify avoidance measures and appropriate levels of data recovery (MM 3.6-2a) for individually impacted and contributing archaeological sites that cannot be avoided. The MOA will identify the APE and restate processes for resolving adverse effects to historic properties for both archaeological and tribal values, and processes required for modifications to the APE. The HPTP will summarize themes that define the Bissell Basin Archaeological District, highlighting known research themes and avenues for additional inquiry, and data recovery methods that can be scaled to manage the range of archaeological deposits that exist in the APE. Beyond basic fieldwork, methods to be specified in the HPTP include analysis of existing collections from archaeological sites in the EUL, special studies such as chronometric analyses (i.e., radiocarbon, obsidian hydration), paleoethnobotanical analyses, pollen, starch grain, and protein residue analyses, and paleoenvironmental investigations. The HPTP will include guidance for recommendations for additional work that may be required (including monitoring during construction (MM 3.6-3a), and the proper treatment of inadvertent discoveries and human remains (MM 3.6-4a). The HPTP will also reference existing thematic studies for historical periods of significance, and summarize those themes important to historic period NRHP-eligible sites located within each Alternative. The HPTP will discuss the conveyance of tribal values through the material remains identified at contributing elements to the Bissell Basin Archaeological District, and describe in detail the mitigation required to resolve adverse effects to contributing elements that cannot be avoided. Implementation of a worker environmental awareness training program (WEAP) (MM 3.6-5a) will ensure that all project personnel are trained in the proper treatment of cultural resources, cultural sensitivities regarding archaeological material, laws and regulations, and project-specific treatment measures. Mitigation through public outreach and education (MM 3.6-6a) and relocation of cultural material from some impacted sites where appropriate (MM 3.6-7a) will resolve adverse effects to tribal values of the Bissell Basin Archaeological District.

Implementation of MM 3.6-1a (MOA and HPTP), MM 3.6-2a (data recovery), MM 3.6-3a (archaeological and tribal monitoring), MM 3.6-4a (treatment of inadvertent discoveries), MM 3.6-5a (worker environmental awareness program), MM 3.6-6a (public outreach and education), and MM 3.6-7a (relocation of cultural material) would mitigate adverse effects to historic properties under Section 106 criteria A, C and D, and CEQA criteria 1, 3 and 4 for both Alternatives. Additionally, implementation of MM 3.6-1b through 3.6-8b, further described below, would ensure

that both known and unknown resources that could be discovered during construction of the gen-tie line are properly treated and significant impacts mitigated. No cultural resources have been identified as significant under Section 106 Criteria B, or CEQA Criteria 2. Therefore, none of the identified resources would be affected in such a way that the provided mitigation would be insufficient to resolve project-related effects.

Paleontological Resources

Potential significant effects to paleontological resources include, but are not limited to, being directly affected and destroyed by construction equipment and project-related vehicles, exposure of alluvium during construction that may subject the rocks to increased weathering and erosion, unauthorized collection of fossils by project personnel (as well as amateur and commercial collectors who would have greater access to the area), and vandalism.

Construction activities in younger Quaternary alluvium deposits, which have little potential to yield significant paleontological resources, would not be expected to affect unique paleontological resources or unique geologic features. There is a low potential for encountering unique paleontological resources within the project site during ground-disturbing construction activities such as grubbing, grading, and excavation. However, deeper excavations (greater than 10 feet) that extend down into older deposits may encounter significant vertebrate fossil remains. Depths of the Proposed Action range from 2 to 8 feet, based on placement of pipe pile foundations and footings. As such, it is not anticipated that project-related excavation would encounter these deeper deposits.

Implementation of Mitigation Measures MM 3.6-5b (Paleontological Resources Mitigation and Monitoring Plan), MM 3.6-6b (worker paleontological resources environmental awareness training program), MM 3.6-7b (paleontological resources monitoring), and MM 3.6-8b (paleontological resources discoveries) would minimize effects to paleontological resources.

Operation and Maintenance

Cultural Resources

Once the project is constructed, it is unlikely that any additional direct loss or disturbance to known cultural resources would occur during routine operation and maintenance of Alternative A. However, the increase in vehicle traffic associated with operation and maintenance at the site would result in additional personnel accessing the solar facility and gen-tie route. There is the potential that personnel operating equipment at or making routine visits to the solar facility or gen-tie route, may collect artifact materials from the ground surface, which would have an adverse effect on cultural resources. These effects could be considered significant if continued over long periods of time. Implementation of MM 3.6-1a through MM 3.6-7a and MM 3.6-11a for the solar facility portion of the project, as well as implementation of MM 3.6-1b through 3.6-4b and MM 3.6-8b for the gen-tie portion of the project, would minimize these effects.

Paleontological Resources

Because such activities would not involve subsurface excavation, routine operations and maintenance of the solar facility and gen-tie are not expected to result in a disturbance or loss of paleontological resources. No mitigation is required.

Decommissioning

Cultural Resources

At the time the solar facility and gen-tie lines are decommissioned in approximately 35 years, the project area could be converted to other uses or it could be revegetated to a natural state. As a result, new direct effects could occur to known or unknown cultural resources as a result of ground disturbance. However, implementation of Mitigation Measures MM 3.6-1a through MM 3.6-7a, as well as implementation of MM 3.6-1b through MM 3.6-4b and MM 3.6-8b for the gen-tie portion of the project, would minimize these effects.

Paleontological Resources

Similar to the discussion for cultural resources, decommissioning of the solar facility and gen-tie line could result in new effects to paleontological resources as a result of ground disturbance. However, implementation of Mitigation Measures MM 3.6-8a through MM 3.6-10a for the solar facility portion of the project and Mitigation Measures MM 3.6-5b through MM 3.6-7b for the gen-tie portion of the project, would minimize these effects.

CEQA: Impact Significance Determination

Impact 3.6-1: The project would cause a substantial adverse change in the significance of a historical or unique archaeological resource.

As discussed in detail under the NEPA Environmental Effects, the construction, operation and maintenance, and decommissioning of Alternative A would result in direct impacts to known cultural resources. Many of these impacts would be significant prior to mitigation.

A total of 298 cultural resources were recorded within the Alternative A site plan area. Of these, 215 are prehistoric archaeological sites that are included in the Bissell Basin NRHP eligible prehistoric archaeological district that overlaps the Alternative A project area. The remainder (83) are historic-period resources, including 9 historic homesites, 49 HPRDs, 12 submodern refuse deposits, 8 wells and 5 fence lines. Eight of the homesites are eligible for listing in the NRHP (one was formally evaluated; seven are treated as eligible based on existing information) and one is not eligible. None of the HPRDs (including submodern), wells, or fence lines is eligible for NRHP or CRHR listing.

The Bissell Basin Archaeological District is eligible for NRHP listing under Criterion A, C, and D, and for the CRHR under criteria 1, 3, and 4 for both archaeological and tribal values.

As described previously, a total of 16 cultural resources are documented within the East-West Gen-Tie route options; 14 of them have been determined, recommended, or are assumed eligible for listing in the NRHP and CRHR. All three East-West route options (Options A, B, and C) contain the same resources.

A total of four cultural resources are documented within North-South Gen-Tie Option 1. One, which also occurs along the East-West gent-tie route options, is assumed eligible for listing in the NRHP and CRHR. Another has been recommended eligible, but the portion of the resources within

the APE does not contribute to the eligibility of the resource. The remaining two resources have been recommended not eligible.

A total of two resources are documented within North-South Gen-Tie Option 2, but both have been recommended not eligible for the NRHP or CRHR.

Of the resources determined, recommended, or assumed eligible for the CRHR, eight are linear historic period features that cross the APE. Construction of the transmission towers for the gen-tie line would avoid the resources themselves, and the transmission line would span the resources. As such, they would not be impacted by the Proposed Action. Five additional resources occur within the APE, but flexibility in the siting of the transmission line towers can avoid direct impacts to the resources. A final resource occurs within the APE, but it has been determined that the portion within the APE does not contribute to the eligibility of the site, and so any impacts from the Proposed Action on the portion of the resource within the APE would not constitute a significant impact.

As discussed above, without mitigation, Alternative A has the potential to impact historical resources and unique archaeological resources. Further, Alternative A has the potential to impact unknown buried archaeological resources. As described previously, implementation of Mitigation Measures MM 3.6-1b (retention of a qualified archaeologist), MM 3.6-2b (worker environmental awareness program, MM 3.6-3b (archaeological and Native American monitoring), and MM 3.6-4b (treatment of inadvertent discoveries) for the gen-tie portion of the project, as well as Mitigation Measures MM 3.6-1a through 3.6-7a, as described above, for the solar facility portion of the project, would reduce impacts to archaeological and other cultural resources that qualify as historical resources to less than significant.

Mitigation Measures

Implementation of MM 3.6-1a (MOA and HPTP), MM 3.6-2a (data recovery), MM 3.6-3a (archaeological and tribal monitoring), MM 3.6-4a (treatment of inadvertent discoveries), MM 3.6-5a (worker environmental awareness program), MM 3.6-6a (public outreach and education), and MM 3.6-7a (relocation of cultural material) would mitigate adverse effects to historic properties under CEQA criteria 1, 3 and 4 for both solar field Alternatives. Additionally, implementation of MM 3.6-1b through 3.6-4b, and MM 3.6-8b would ensure that both known and unknown resources that could be discovered during construction of the gen-tie line are properly treated and significant impacts mitigated. No cultural resources have been identified as significant under Section 106 Criteria B, or CEQA Criteria 2. Therefore, none of the identified resources would be affected in such a way that the provided mitigation would be insufficient to resolve project-related effects.

Level of Significance after Mitigation

Impacts to historical and unique archaeological resources would be less than significant.

Impact 3.6-2: The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

As discussed under the NEPA Environmental Effects, the development of Alternative A has a low potential for encountering unique paleontological resources within the project site during ground-

disturbing construction activities, although the deeper excavation has a higher potential to encounter paleontological resources.

Mitigation Measures

Implementation of Mitigation Measures MM 3.6-5b (Paleontological Resources Mitigation and Monitoring Plan), MM 3.6-6b (worker paleontological environmental awareness program), MM 3.6-7b (paleontological resources monitoring and treatment of discoveries) for the gen-tie portion of the project, as well as Mitigation Measures MM 3.6-1a through MM 3.6-7a for the solar facility portion of the project, would reduce impacts to resources to a level below significance under CEQA.

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.6-3: The project would disturb human remains, including those interred outside of formal cemeteries.

Previous and current archaeological research in the EUL has identified archaeological materials, such as beads, steatite pendants, and other ornaments, as well as indeterminate burned bone, that suggest the project area has been used for human burial purposes in the past. These materials indicate that there is the possibility of impacting Native American human remains through project implementation where avoidance is not feasible, or inadvertently during construction. In the event that known human remains are impacted, or inadvertently discovered during project construction activities, the human remains and/or the location of their deposition could be damaged, which could be a significant impact.

Mitigation Measures

Implement Mitigation Measure MM 3.6-4a for the solar facility portion of the project and Mitigation Measure MM 3.6-8b for the gen-tie portion of the project (discovery of human remains) (see Section 3.6.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.16-1a: The project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe that is listed or eligible for listing in the CRHR, or in a local register of historical resources defined in Public Resources Code Section 5020.1(k).

The County's government-to-government consultation efforts with interested Native American groups conducted pursuant to AB 52 is ongoing, and formal recognition of tribal cultural resources (TCRs) by the County has yet to be completed. However, during federal tribal consultation, the Tejon Indian Tribe and San Manuel Band of Mission Indians identified the Bissell Basin Archaeological District as a tribal cultural resource under CEQA significance criteria 1, 3, and 4, for tribal values that also intersect with archaeological values. No TCRs have been identified within

the gen-tie line APE, although there remains the possibility of discovering TCRs during gen-tie construction. Therefore, development of the project site would cause a substantial adverse change in the significance of a tribal cultural resource.

Implementation of MM 3.6-1a (MOA and HPTP), MM 3.6-2a (data recovery), MM 3.6-3a (archaeological and tribal monitoring), MM 3.6-4a (treatment of inadvertent discoveries), MM 3.6-5a (worker environmental awareness program), MM 3.6-6a (public outreach and education), and MM 3.6-7a (relocation of cultural material) would mitigate significant impacts to TCRs in the project site under CEQA criteria 1, 3 and 4 for both solar field Alternatives. Additionally, implementation of MM 3.6-1b through 3.6-4b, and MM 3.6-8b would ensure that both known and unknown resources that could be discovered during construction of the gen-tie line are properly treated and significant impacts mitigated. No tribal cultural resources have been identified as significant under CEQA Criteria 2. Therefore, no tribal cultural resources would be affected in such a way that the provided mitigation would be insufficient to resolve project-related effects to tribal cultural resources.

Mitigation Measures

Implementation of MM 3.6-1a (MOA and HPTP), MM 3.6-2a (data recovery), MM 3.6-3a (archaeological and tribal monitoring), MM 3.6-4a (treatment of inadvertent discoveries), MM 3.6-5a (worker environmental awareness program), MM 3.6-6a (public outreach and education), and MM 3.6-7a (relocation of cultural material) for the solar facility portion of the project, and implementation of MM 3.6-1b through 3.6-4b, and MM 3.6-8b for the gen-tie portion of the project.

Level of Significance

Impacts would be less than significant with mitigation.

Impact 3.16-1b: The project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

As noted above, the County's government-to-government consultation efforts with interested Native American groups conducted pursuant to AB 52 is ongoing and formal recognition of TCRs by the County has yet to be completed. However, during federal tribal consultation, the Tejon Indian Tribe and San Manuel Band of Mission Indians identified the Bissell Basin Archaeological District as a tribal cultural resource under CEQA significance criteria 1, 3, and 4, for tribal values that also intersect with archaeological values. No TCRs have been identified within the gen-tie line APE, although there remains the possibility of discovering TCRs during gen-tie construction. Therefore, development of the project site, would cause a substantial adverse change in the significance of a tribal cultural resource.

Implementation of MM 3.6-1a (MOA and HPTP), MM 3.6-2a (data recovery), MM 3.6-3a (archaeological and tribal monitoring), MM 3.6-4a (treatment of inadvertent discoveries), MM 3.6-5a (worker environmental awareness program), MM 3.6-6a (public outreach and education), and MM 3.6-7a (relocation of cultural material) would mitigate significant impacts to TCRs in the project site under CEQA criteria 1, 3 and 4 for both solar field Alternatives. Additionally, implementation of MM 3.6-1b through 3.6-4b, and MM 3.6-8b would ensure that both known and unknown resources that could be discovered during construction of the gen-tie line are properly treated and significant impacts mitigated. No tribal cultural resources have been identified as significant under CEQA Criteria 2. Therefore, no tribal cultural resources would be affected in such a way that the provided mitigation would be insufficient to resolve project-related effects to tribal cultural resources.

Mitigation Measures

Implementation of MM 3.6-1a (MOA and HPTP), MM 3.6-2a (data recovery), MM 3.6-3a (archaeological and tribal monitoring), MM 3.6-4a (treatment of inadvertent discoveries), MM 3.6-5a (worker environmental awareness program), MM 3.6-6a (public outreach and education), and MM 3.6-7a (relocation of cultural material) for the solar facility portion of the project, and implementation of MM 3.6-1b through 3.6-4b, and MM 3.6-8b for the gen-tie portion of the project.

Level of Significance

Less than significant with mitigation.

3.6.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Cultural Resources

The proposed Alternative B would involve grading of approximately 1,500 acres of mostly undisturbed land. Alternative B would utilize the same gen-tie line route described in Alternative A. Approximately 150 acres of disturbed and undisturbed lands would be graded or otherwise disturbed for construction of the gen-tie line. Together, Alternative B would result in a direct effect on approximately 1,650 acres of ground disturbance. Ground disturbance could directly affect known cultural resources within the project area by damaging or displacing artifacts and features, resulting in a loss of information about history and prehistory in the area. Construction of Alternative B also has the potential for indirect effects to known cultural resources, including effects created by erosion, dust, and surface runoff. These effects would be considered significant if erosion, dust, or surface runoff creates an unstable ground surface that would undermine or displace cultural materials or otherwise damage the cultural resources.

As with Alternative A, the proposed Alternative B site was designed to avoid several significant archaeological resources located along the western and northern installation boundaries, and within the overall EUL area. Some of the resources avoided include historic-period homesites and large prehistoric habitation sites. The following summary of cultural resources includes those that are in or intersected by the Alternative B site (APE), and excludes those that are completely avoided.

A total of 73 cultural resources were recorded within the Alternative B solar field project area. Of these, 43 are prehistoric archaeological sites that are included in the Bissell Basin NRHP-eligible prehistoric archaeological district, and 30 are historic period resources (HPRDs, wells, or fencelines), none of which is eligible for NRHP listing.

As described previously, a total of 16 cultural resources are documented within the East-West Gen-Tie route options; 14 of them have been determined, recommended, or are assumed eligible for listing in the NRHP and CRHR. All three East-West route options (Options A, B, and C) contain the same resources.

A total of four cultural resources are documented within North-South Gen-Tie Option 1. One, which also occurs along the East-West gent-tie route options, is assumed eligible for listing in the NRHP and CRHR. Another has been recommended eligible, but the portion of the resources within the APE does not contribute to the eligibility of the resource. The remaining two resources have been recommended not eligible.

A total of two resources are documented within North-South Gen-Tie Option 2, but both have been recommended not eligible for the NRHP or CRHR.

Of the resources determined, recommended, or assumed eligible for the CRHR, eight are linear historic period features that cross the APE. Construction of the transmission towers for the gen-tie line would avoid the resources themselves, and the transmission line would span the resources. As such, they would not be impacted by the Proposed Action. Five additional resources occur within the APE, but flexibility in the siting of the transmission line towers can avoid direct impacts to the resources. A final resource occurs within the APE, but it has been determined that the portion within the APE does not contribute to the eligibility of the site, and so any impacts from the Proposed Action on the portion of the resource within the APE would not constitute a significant impact.

Given the results of this analysis, Alternative B has the potential to adversely affect cultural resources both within the solar facility and along the proposed gen-tie routes, including resources eligible for the NRHP and CRHR.

If Alternative B is approved:

- The project would have an adverse effect on the Bissell Basin Archaeological District where impacts occur to individual archaeological sites that are considered to be contributors to the District's NRHP significance under Criterion A, C, and D for archaeological and tribal values. Impacts to individual prehistoric archaeological sites that are not contributors to the Bissell Basin Archaeological District would not constitute an adverse effect.

Both eligible homesites will be avoided; therefore, implementation of Alternative B will not have an adverse effect on these resources.

- Individual HPRDs and fence lines are categorically considered not significant and not eligible for NRHP listing by the CRM; implementation of Alternative B would not have an adverse effect on these resources.

The provided mitigation to resolve adverse effects to the Bissell Basin Archaeological District is designed to address both archaeological and tribal values where those values intersect under Criterion D of the NRHP and Criterion 4 of the CRHR. Additional mitigation is provided to resolve adverse effects to tribal values primarily under Criterion A and C of the NRHP and Criterion 1 and 3 of the CRHR.

Mitigation measures MM 3.6-1a through MM 3.6-7a would mitigate adverse effects under Criterion D of the NRHP to the Bissell Basin Archaeological District where effects to contributing elements cannot be avoided. Implementation of MM 3.6-1a, Memorandum of Agreement (MOA) between the CRM, consulting tribes, and the California SHPO will further specify details of all mitigation measures. The MOA will require implementation of a historic properties treatment plan (HPTP) that will identify avoidance measures and appropriate levels of data recovery (MM 3.6-2a) for individually impacted and contributing archaeological sites that cannot be avoided. The MOA will identify the APE and restate processes for resolving adverse effects to historic properties for both archaeological and tribal values, and processes required for modifications to the APE. The HPTP will summarize themes that define the Bissell Basin Archaeological District, highlighting known research themes and avenues for additional inquiry, and data recovery methods that can be scaled to manage the range of archaeological deposits that exist in the APE. Beyond basic fieldwork, methods to be specified in the HPTP include analysis of existing collections from archaeological sites in the EUL, special studies such as chronometric analyses (i.e., radiocarbon, obsidian hydration), paleoethnobotanical analyses, pollen, starch grain, and protein residue analyses, and paleoenvironmental investigations. The HPTP will include guidance for recommendations for additional work that may be required (including monitoring during construction (MM 3.6-3a), and the proper treatment of inadvertent discoveries and human remains (MM 3.6-4a). The HPTP will also reference existing thematic studies for historical periods of significance, and summarize those themes important to historic period NRHP-eligible sites located within each Alternative. The HPTP will discuss the conveyance of tribal values through the material remains identified at contributing elements to the Bissell Basin Archaeological District, and describe in detail the mitigation required to resolve adverse effects to contributing elements that cannot be avoided. Implementation of a WEAP (MM 3.6-5a) will ensure that all project personnel are trained in the proper treatment of cultural resources, cultural sensitivities regarding archaeological material, laws and regulations, and project-specific treatment measures. Mitigation through public outreach and education (MM 3.6-6a) and relocation of cultural material from some impacted sites where appropriate (MM 3.6-7a) will resolve adverse effects to tribal values of the Bissell Basin Archaeological District.

Implementation of MM 3.6-1a (MOA and HPTP), MM 3.6-2a (data recovery), MM 3.6-3a (archaeological and tribal monitoring), MM 3.6-4a (treatment of inadvertent discoveries), MM 3.6-5a (worker environmental awareness program), MM 3.6-6a (public outreach and education), and MM 3.6-7a (relocation of cultural material) would mitigate adverse effects to historic properties under Section 106 criteria A, C and D, and CEQA criteria 1, 3 and 4 for both Alternatives. Additionally, implementation of MM 3.6-1b through 3.6-4b, and MM 3.6-8b, further described below, would ensure that both known and unknown resources that could be discovered during construction of the gen-tie line are properly treated and significant impacts mitigated. No cultural resources have been identified as significant under Section 106 Criteria B, or CEQA Criteria 2.

Therefore, none of the identified resources would be affected in such a way that the provided mitigation would be insufficient to resolve project-related effects.

Paleontological Resources

Potential adverse effects to paleontological resources would be similar to those identified for Alternative A and include, but are not limited to, being directly affected and destroyed by construction equipment and project-related vehicles, exposure of alluvium during construction that may subject the rocks to increased weathering and erosion, unauthorized collection of fossils by project personnel (as well as amateur and commercial collectors who would have greater access to the area), and vandalism. Construction activities in younger Quaternary alluvium deposits, which have little potential to yield significant paleontological resources, would not be expected to affect unique paleontological resources or unique geologic features. However, deeper excavations (greater than 10 feet) that extend down into older deposits may encounter significant vertebrate fossil remains. Depths of the Proposed Action range from 2 to 8 feet, based on placement of pipe pile foundations and footings. As such, it is not anticipated that project-related excavation would encounter these deeper deposits.

Implementation of Mitigation Measures MM 3.6-8a (Paleontological Resources Mitigation and Monitoring Plan, including resource treatment), MM 3.6-9a (worker paleontological resources environmental awareness training program), and MM 3.6-10a (paleontological resources monitoring and resource) would minimize effects to paleontological resources due to construction of the solar facility. Additionally, implementation of Mitigation Measures MM 3.6-5b through MM 3.6-7b, further described above, would ensure that effects to paleontological resources due to construction of the gen-tie lines, would be minimized.

Operation and Maintenance

Cultural Resources

Once the project is constructed, it is unlikely that any additional direct loss or disturbance to known cultural resources would occur during routine operation and maintenance of Alternative B. However, the increase in vehicle traffic associated with operation and maintenance at the site would result in additional personnel accessing the solar facility and gen-tie route. There is the potential that personnel operating equipment at or making routine visits to the solar facility or gen-tie route, may collect artifact materials from the ground surface, which would have an adverse effect on cultural resources. These effects could be considered significant if continued over long periods of time.

Implementation of MM 3.6-1a through MM 3.6-7a for the solar facility portion of the project, as well as implementation of MM 3.6-1b through 3.6-4b and MM 3.6-8b for the gen-tie portion of the project, would minimize these effects.

Paleontological Resources

Routine operations and maintenance at the solar facility or along the gen-tie route are not expected to result in a disturbance or loss of paleontological resources. No mitigation is required.

Decommissioning

Cultural Resources

At the time the solar facility and gen-tie line are decommissioned in approximately 35 years or so, the project area could be converted to other uses or it could be revegetated to a natural state. Removal of equipment and ground preparation for revegetation may result in new direct effects to known or unknown cultural resources. However, implementation of Mitigation Measures MM 3.6-8a through MM 3.6-10a for the solar facility portion of the project and Mitigation Measures MM 3.6-5b through 3.6-7b for the gen-tie portion of the project, would minimize these effects. would minimize these effects.

Paleontological Resources

Similar to the discussion for cultural resources, decommissioning of the solar facility and gen-tie line could result in new effects to paleontological resources as a result of ground disturbance. However, implementation of MM 3.6-8a through MM 3.6-10a for the solar facility portion of the project and Mitigation Measures MM 3.6-5b through 3.6-7b for the gen-tie portion of the project, would minimize these effects. would minimize these effects.

CEQA: Impact Significance Determination

As discussed in detail under the NEPA Environmental Effects, the development of Alternative B would result in potentially significant direct impacts to known cultural resources, including historical resource, unique archaeological resources, and human remains. Because Alternative B would result in approximately one-third the physical development of Alternative A, this alternative would result in reduced impacts to cultural resources compared to Alternative A. The potential impacts along the proposed gen-tie route options would be the same between the two alternatives. However, because construction and operation of the facility would remain the same as in Alternative A, the significance conclusions for the impacts identified for each phase of Alternative B (construction, operation and maintenance, decommissioning) would be the same as described above for Alternative A.

As discussed previously, a total of 73 cultural resources were recorded within the Alternative B solar field project area. Of these, 43 are prehistoric archaeological sites that are included in the Bissell Basin NRHP-eligible prehistoric archaeological district, and 30 are HPRDs, wells, or fencelines, none of which is eligible for NRHP or CRHR listing.

The gen-tie route options for Alternative B are the same as for Alternative A, as discussed above. Without mitigation, Alternative B has the potential to impact historical resources and unique archaeological resources. As discussed under the NEPA Environmental Effects, the development of Alternative B has a low potential for encountering unique paleontological resources within the project site during ground-disturbing construction activities, although the deeper excavation has a higher potential to encounter paleontological resources. Finally, no tribal cultural resources were identified through consultation conducted pursuant to AB 52.

Mitigation Measures

Implementation of Mitigation Measures MM 3.6-1a through 3.6-10a for the solar facility portion of the project and MM 3.6-1b through MM 3.6-8b for the gen-tie portion of the project, would reduce impacts to resources to a level below significance under CEQA.

Level of Significance after Mitigation

Impacts to historical resources would be less than significant. Impacts to paleontological resources and human remains would be less than significant. There would be no impacts to tribal cultural resources.

3.6.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A or Alternative B would be built. If Alternative C were implemented, there would be no changes to onsite conditions or existing cultural or paleontological resources. No mitigation is required.

CEQA: Impact Significance Determination

Alternative C would result in no impacts to cultural or paleontological resources at the project site.

Mitigation Measures

No mitigation measures are required.

3.6.4 Cumulative Impact Analysis

Cumulative effects on cultural resources take into account the Proposed Action's effects as well as those likely to occur as a result of other existing, proposed, and reasonably foreseeable projects. When analyzing cumulative effects on cultural resources, an assessment is made of the effects on individual resources as well as the inventory of cultural resources within the cumulative effect analysis area.

3.6.4.1 NEPA: Cumulative Environmental Effects and Their Significance

The geographic area of analysis for cultural resources includes the western Antelope Valley, which is in the western tip of the Mojave Desert. The Antelope Valley includes portions of the southeast corner of Kern County and portions of northern Los Angeles County. The western Antelope Valley is triangularly shaped and is about 35 miles from west to east and 40 miles from north to south at its widest points. This geographic scope of analysis is appropriate because the archaeological, historical, and paleontological resources within this radius are expected to be similar to those that occur on the project site because of their proximity, and because similar environments, landforms, and hydrology would likely result in similar land uses and, thus, site types. Similar geology in this area would likely yield fossils of similar sensitivity and quantity. This is a large enough area to encompass any effects caused by other projects, and provides a reasonable context wherein cumulative actions could affect cultural and paleontological resources during construction, or as a result of operation and maintenance, or closure and decommissioning activities.

As described in Chapter 3.0, multiple projects, including solar and wind energy projects, are proposed throughout Kern County and northern Los Angeles County. Many are located in the western Antelope Valley. Cumulative effects to cultural resources in this area could occur if other existing or proposed projects, in conjunction with the project, had or would have effects on cultural resources that, when considered together, would be significant.

The western Antelope Valley contains a significant archaeological and historical record that, in many cases, has not been well documented or recorded. In addition, much of the land in this area has been historically altered by human activities that have both deposited and degraded cultural resources. Cumulatively, there is potential for ongoing and future development projects in the vicinity to disturb landscapes that may contain known or unknown cultural resources. Thus, the potential construction effects of the Proposed Action, in combination with other large acreage projects (e.g., those in excess of 2,000 acres), including Antelope Valley Solar (#1), Beacon Solar (#2), Fremont Valley Preservation (#4), RE Astoria (#8), Alta East (#37), Alta Infill II (#38), Alta-Oak Creek (#39), Avalon Wind (#40), Catalina (#4444), Golden Queen Mining (#45), Pacific Wind (#49), and 2PdV Wind Energy (#50) in Eastern Kern County, could contribute to a cumulatively significant effect on cultural resources.

Mitigation measures are included in this EIS/EIR to reduce potentially significant effects to cultural resources prior to and during construction, operation and maintenance, and decommissioning of this project. However, the Proposed Action by itself would have a less-than-significant effect to cultural resources with incorporation of Mitigation Measures MM 3.6-1a through MM 3.6-7a for the solar facility portion of the project, as well as implementation of MM 3.6-1b through 3.6-4b and MM 3.6-8b for the gen-tie portion of the project. Therefore, with the implementation of these Mitigation Measures, the Proposed Action would not have a cumulatively considerable contribution to cumulative effects to cultural resources.

Excavation and ground disturbing activities associated with the project in conjunction with other projects in the area could contribute to the progressive loss of fossil remains, associated geological and geographic data, and fossil bearing strata, which is a potentially significant effect. However, the Proposed Action by itself would have a less-than-significant effect to paleontological resources with incorporation of Mitigation Measures MM 3.6-8a through MM 3.6-10a for the solar facility portion of the project and Mitigation Measures MM 3.6-5b through 3.6-7b for the gen-tie portion of the project. Therefore, with the implementation of these Mitigation Measures, the Proposed Action would not have a cumulatively considerable contribution to cumulative effects to paleontological resources.

3.6.4.2 CEQA: Cumulative Impact Significance Determination

As discussed above in the NEPA cumulative effects analysis, the western Antelope Valley contains a significant archaeological and historical record that, in many cases, has not been well documented or recorded. Thus, there is potential for ongoing and future development projects in the vicinity to disturb landscapes that may contain known or unknown cultural resources. Potential impacts of the project to cultural resources, in combination with other projects in the area, could contribute to a cumulatively significant impact due to the overall loss of historical and archaeological artifacts unique to the region. However, mitigation measures are included in this

EIR/EIS to reduce potentially significant project impacts to cultural resources during construction of the proposed project. Therefore, with implementation of MM 3.6-1a through MM 3.6-7a for the solar facility portion of the project, as well as implementation of MM 3.6-1b through 3.6-4b for the gen-tie portion of the project, the project would not have a cumulatively considerable contribution to impacts to unique archaeological or historical resources. Cumulative impacts to paleontological resources and human remains would be less than significant with implementation of Mitigation Measures MM 3.6-8a through 3.6-10a for the solar facility portion of the project, and Mitigation Measures MM 3.6-5b through MM 3.6-8b for the gen-tie portion of the project. Since no tribal cultural resources were identified, the project would not have a cumulatively considerable contribution to impacts to such resources.

Mitigation Measures

Implement Mitigation Measures MM 3.6-1a through 3.6-10a for the solar facility portion of the project and Mitigation Measures MM 3.6-1b through MM 3.6-8b for the gen-tie portion of the project (see Section 3.6.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.6.5 Mitigation Measures

Adverse effects to historic properties under Section 106 of the NHPA and significant impacts to historical resources under CEQA resulting from the Proposed Action would be resolved through the following mitigation measures that include data recovery of impacted archaeological sites and compliance with the terms of an MOA to be developed under Section 106 of the NHPA between the Air Force, consulting tribes, and the State Historic Preservation Office.

3.6.5.1 Solar Facility Mitigation Measures

MM 3.6-1a: Consultation Agreement and Cultural Resources Management Plan. The Cultural Resources Manager (CRM) for archaeology at Edwards Air Force Base in accordance with 36 CFR 800.16(y) has determined that the development of a commercial Solar EUL project is a federal undertaking with the potential to adversely affect cultural resources including archaeological sites. The EUL consists of two separate components, the power generation facility located on Edwards AFB and not to exceed 4,000 acres in size, and the gen-tie route options located off-base that will be used to transmit the generated power to a hub connected to the electrical grid up to 14 miles distant. As such, the entire project is subject to the Section 106 process with Edwards AFB acting as the lead agency for Section 106 consultation and Kern County as the lead agency for AB 52 consultation. Pursuant to 36 CFR 800.2 the Section 106 consultation will include the California SHPO, and federal and non-federally recognized tribes. The CRM will also seek additional consulting or interested parties consistent with 36 CFR 800.2(c)(5). Collectively the SHPO, Kern County, private land owners, the EUL developer, tribes, consulting and interested parties will be from here forward referred to as stakeholders. Because identification of historic properties/historical resources and adverse effects/significant impacts under Section 106 of the NHPA/CEQA, respectively, is complete, the CRM will enter into a Memorandum of Agreement (MOA) with the SHPO and consulting parties according to 36 CFR 800.6(b) and (c).

The MOA shall identify the actions required to minimize and resolve adverse effects, including the requirement for preparation of a Historic Properties Treatment Plan (HPTP). The HPTP will require and guide implementation of MM 3.6-2a through MM 3.6-7a for the Proposed Action ; these mitigation measures provide performance standards and feasible mitigation to ensure that impacts to cultural resources will be less than significant. The HPTP will outline the procedures for treatment of known historic properties/historical resources and inadvertent discoveries, as well as archaeological monitoring protocols, and outline the requirements for retention of a Secretary of Interior qualified archaeologist to implement mitigation, as appropriate. Development of the MOA and HPTP and in executing the Section 106 process in consultation with all stakeholders ensures that Edwards AFB will fulfill its Section 106 obligations and allow a Record of Decision to be issued, and will ensure that the County's CEQA obligations are satisfied for mitigating significant impacts to a level below significance.

The reports documenting the implementation of the HPTP shall be submitted to the Kern County Planning and Development Director and Southern San Joaquin Valley Archaeological Information Center at California State University, Bakersfield, and to the CRM.

MM 3.6-2a: Data Recovery and Avoidance.

Where preservation in place of a significant archaeological resource (including Unique Archaeological Resources as defined in CEQA) is not feasible, a qualified archaeologist, in consultation with the Cultural Resource Manager (CRM), County of Kern, consulting tribes, and the project applicant, shall complete archaeological data recovery. This excludes archaeological resources found to contain human remains and/or funerary objects or sacred objects, which will be treated according to the NAGPRA Plan of Action. The standard for completion of data recovery may vary for individual archaeological sites, but is understood herein to be collection of a statistically representative sample of the archaeological deposits such that data redundancy is achieved and the unique properties of the archaeological sites are addressed. Implementation of data recovery mitigation shall include the following steps:

1. In accordance with the requirements of mitigation measure (MM) 3.6-2, prepare a research design and archaeological data recovery plan prior to project-related ground disturbance for the recovery of resources in unavoidable sites that will capture those categories of data for which the site is significant, and implement the data recovery plan.
2. The data recovery phase shall focus on recovering archaeological data sufficient to mitigate the destruction of a portion or the entire site within the area of potential effects (APE).
3. If, in the opinion of the qualified archaeologist and in light of the data available, the significance of the site is such that data recovery cannot capture the values that qualify the site for inclusion on the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR), the applicant shall reconsider project plans in light of the high value of the cultural resource, and implement more substantial modifications to the proposed project that shall allow the site to be preserved intact, such as project redesign or capping the site with fill soil.
4. Standard archaeological collection and/or excavation units may be used, with methods consistent with those employed during previous investigations in the region and with Secretary of Interior's standards. Following completion of the excavations, all cultural materials shall be washed, cataloged, and analyzed. Technical analyses may include artifact analysis, radiocarbon dating, obsidian hydration, pollen and protein residue, and other analyses as needed to describe the cultural materials and archaeological deposits. Prior to artifact processing, the consulting tribes will be afforded the opportunity to identify

objects/materials that should not be exposed to washing and certain kinds of destructive analyses and that may be treated according to separate, culturally-specific and appropriate methods and disposition. A data recovery report shall be prepared and filed with the CRM, and the California Historical Resources Information System Information Center at California State University, Bakersfield.

5. The CRM shall provide for the permanent curation of recovered materials from Edwards Air Force Base (AFB) property. Curation does not negate artifact relocation described under MM 3.6-7a, rather artifact relocation and reburial will be the preference whenever possible.

For archaeological sites considered individually eligible for NRHP/CRHR listing (or considered contributors to the Bissell Basin Archaeological District) that can be avoided, reasonable protective measures shall be provided, including protective fencing around an avoided resource with an appropriate buffer, silt fencing to avoid indirect effects through project-related runoff, and other measures as applicable. In certain instances, avoidance through capping using sterile fill matrix, use of rubber mats, or other measures may be deemed appropriate to achieve avoidance. All decisions regarding the specific measures used to achieve preservation in place and capping will be the result of collaboration amongst consulting parties and the Air Force.

General avoidance and capping are two available avoidance measures on Edwards AFB property and on lands under County of Kern jurisdiction. These forms of avoidance satisfy CEQA Guidelines Section 15125.4(b)(3).

MM 3.6-3a: Archaeological and Native American Resources Monitoring. Archaeological and Native American monitoring are both subject to consultation with the stakeholders under Section106. As such, the requirements of various stakeholders must be considered and accommodation made wherever feasible. Therefore, specific archaeological and Native American monitoring details cannot be included herein. However, at a minimum it is expected that the developer shall retain a qualified archaeological monitor and a Native American monitor for project-related ground disturbing activities for the purpose of identifying and avoiding adverse effects to significant archaeological resources. The HPTP (MM 3.6-1a) shall provide details on archaeological and Native American monitoring, including monitor rotation schedules, lines of authority and communication, monitoring procedures and protocols, and documentation.

Ground-disturbing activities include, but are not limited to, brush clearance, grubbing, excavation, trenching, grading, and drilling, or other activities deemed appropriate for monitoring identified in the consultation process. Areas requiring monitoring and the level of monitoring shall be developed by the Edwards AFB Cultural Resources Manager in coordination with the Applicant, the qualified archaeologist and consulting tribes, and shall be detailed in the MOA and HPTP for resources on Edwards AFB (as required by Mitigation Measure MM 3.6-1a). Any archaeological monitors shall be, or work under the direct supervision of, a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's standards for professional archaeology and shall be approved by the Air Force. The monitors shall be familiar with the types of historical and prehistoric resources that could be encountered within the project area.

The archaeological monitor shall ensure that personnel performing ground-disturbing activities are displaying the appropriate decal on their hardhat demonstrating their CR Awareness training under Mitigation Measure MM 3.6-5a. The archaeological monitors shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. The archaeological monitors shall be present on the project site according to a schedule as

detailed in the MOA and HPTP for resources on Edwards AFB (as required by Mitigation Measure MM 3.6-1a). The monitors shall maintain a daily log of activities, which will be appended to a final monitoring report that shall be submitted to the Edwards AFB Cultural Resources Manager, Kern County Planning and Natural Resources Department, and Southern San Joaquin Valley Archaeological Information Center. Specific monitoring reporting procedures shall be detailed in the MOA and HPTP for resources on Edwards AFB, (as required by Mitigation Measure MM 3.6-1a).

MM 3.6-4a: Inadvertent Discoveries. During project-level construction, operation and maintenance, and decommissioning, should cultural resources be discovered, all activity within 100 feet of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find. The Cultural Resource Manager or the Kern County Planning and Community Development Department shall also be contacted. If the qualified archaeologist, in consultation with the Cultural Resource Manager or Kern County Planning and Community Development Department and Consulting Native American tribes, determines the resource is significant (i.e., qualifies as a Historic Property, Historical Resource, unique archaeological resource, TCR), or a contributor to the Bissell Basin Archaeological District, then the archaeologist shall determine, in consultation with the Cultural Resource Manager or Kern County Planning and Community Development Department, appropriate avoidance measures or other appropriate mitigation. Preservation in place shall be the preferred manner of mitigation to avoid effects to significant cultural resources. If it is demonstrated that resources cannot be feasibly avoided, the qualified archaeologist shall implement the provisions for mitigative treatments detailed in the MOA (as required by Mitigation Measure MM 3.6-1a). Work shall not resume within 100 feet of the discovery until permission is received from the Cultural Resource Manager (solar array project area) or Kern County Planning and Community Development Department (gen-tie line route project area). In the event of inadvertent discovery of human remains or potential funerary objects or sacred objects, all work shall be halted within a 100-foot radius and temporary protective measures shall be implemented.

On non-federally owned land, the project proponent shall immediately halt work, contact the Kern County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.4 (e)(1) of the California Environmental Quality Act Guidelines. If the County Coroner determines that the remains are Native American, the coroner shall contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by Assembly Bill 2641). The Native American Heritage Commission shall designate a most likely descendent for the remains per Public Resources Code 5097.98. Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et. seq.) directing identification of the next-of-kin will apply.

On federally owned land, the Air Force shall be notified and human remains and associated funerary objects shall be treated pursuant to the Native American Graves Protection and Repatriation Act and in accordance with the MOA and HPTP, and the NAGPRA Plan of Action (included as part of the HPTP).

MM 3.6-5a: Worker Cultural Awareness Training Program. Prior to the commencement of ground-disturbing activities, and for the duration of construction activities, a Worker Cultural Awareness Training Program shall be provided to all construction personnel prior to their commencing work at the project site.

1. The training shall be prepared and conducted by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology. Representatives from the consulting Native American tribes shall also provide training, at their discretion. The training may be in the form of a video.
2. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural training. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker.
3. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Air Force Cultural Resources Manager.

The purpose of the Cultural Awareness Training Program shall be to inform and train construction personnel of the types of cultural resources that may be encountered during construction, and to bring awareness to personnel of actions to be taken in the event of a cultural resources discovery. This may include: a discussion of applicable cultural resources statutes, regulations and related enforcement provisions; an overview of the prehistoric and historic environmental setting and context, as well as current cultural information regarding local tribal groups; samples or visuals of artifacts that might be found in the project area; a discussion of what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction; and procedures to be followed in the event of an inadvertent discovery, as specified by the MOA and HPTP (MM 3.6-1a).

MM 3.6-6a Public Outreach and Education Program. The MOA and HPTP (MM 3.6-2) shall outline the specific requirements for implementation of a Public Outreach and Education Program. The goal of this program will be to provide members of the public, including tribal members, media for interacting with the prehistoric aboriginal past of the Bissell Basin and surrounding region. Media platforms will vary, but will include hard media, such as story-telling displays, displays of archaeological material in an interpretive format (may include traveling displays), and digital media (e.g., internet based content). The HPTP will identify parties responsible for contributing content and producing deliverables.

MM 3.6-7a Relocation of Cultural Material. The MOA and HPTP (MM 3.6-2) shall outline the specific requirements and methods for implementation of an artifact relocation plan, a plan that shall be developed prior to project implementation and shall be carried out prior to construction for previously identified resources and during construction for inadvertent discoveries. The HPTP will specify the decision making process required to identify artifacts in field settings suitable for relocation, versus those that require formal relocation or repatriation. The CRM and consulting tribes have determined that not all cultural material that will be impacted by project construction requires formal curation. Moreover, recognizing that these artifacts will be disturbed during construction, the collection of disturbed artifacts and placement in a precisely recorded nearby location is considered suitable treatment of these materials, particularly during archaeological and tribal monitoring of construction.

MM 3.6-8a: Paleontological Resources Mitigation and Monitoring Plan. The developer shall retain a qualified paleontologist to prepare a Paleontological Resources Mitigation and Monitoring Plan for implementation during construction. The minimum requirement for professional paleontological work is a 4-year undergraduate program and Master of Science degree, although a doctoral degree may be required for certain specialties; a qualified paleontologist is one that has experience in research, field, and laboratory methods for paleontological resources, including experience in fossil salvage, stratigraphy, fossil preparation, and identification, with experience in California. The Paleontological Resources Mitigation and Monitoring Plan shall be submitted to the Air Force for review and approval prior to the start of grading or construction and shall include the following:

1. Procedures for the discovery, recovery, and salvage of paleontological resources encountered during construction, if any, in accordance with standards for recovery established by the Society of Vertebrate Paleontology.
2. Verification that the developer has an agreement with a recognized museum repository (such as the Natural History Museum of Los Angeles County), for the disposition of recovered fossils and that the fossils shall be prepared prior to submittal to the repository as required by the repository (e.g., prepared, analyzed at a laboratory, curated, or cataloged).
3. Description of monitoring reports that will be prepared, which shall include daily logs and a final monitoring report with an itemized list of specimens found to be submitted to the Air Force and the Natural History Museum of Los Angeles County within 90 days of the completion of monitoring.

MM 3.6-9a: Worker Paleontological Resources Awareness Training Program. Prior to the commencement of ground-disturbing activities, and for the duration of construction activities, a Worker Paleontological Awareness Training Program shall be provided to all construction personnel prior to their commencing work at the project site. The training may be performed in concert with the archaeological/cultural resources training (MM 3.6-4a) at the onset of the project. The training shall be prepared and conducted by a qualified paleontologist. The training may be in the form of a video. The training may be discontinued when ground disturbance is completed or suspended, but must resume when ground-disturbing activities resume. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural training. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Edwards AFB Cultural Resource Manager.

The purpose of the Paleontological Awareness Training Program shall be to inform and train construction personnel of the types of paleontological resources that may be encountered during construction, and to bring awareness to personnel of actions to be taken in the event of a paleontological resources discovery. This may include: a discussion of applicable paleontological resources statues, regulations and related enforcement provisions; samples or visuals of fossils that might be found in the project area; implementation of the Paleontological Resources Mitigation and Monitoring Plan; and procedures to be followed in the event of an inadvertent discovery.

MM 3.6-10a: Paleontological Resources Monitoring. The developer shall provide for a qualified paleontologist or an individual working under direct supervision of a qualified paleontologist to monitor construction activities in areas where deeper excavations may be needed (greater than 10

feet). The duration and timing of the monitoring, which shall be set in the Paleontological Resources Mitigation and Monitoring Plan, shall be determined by the qualified paleontologist, in consultation with the Air Force and based on the grading plans. Initially, all excavation or grading activities deeper than ten feet shall be monitored. However, during the course of monitoring, if the paleontologist can demonstrate that the level of monitoring should be reduced, the paleontologist, in consultation with the Air Force, may adjust the level of monitoring to circumstances warranted. If a resource is encountered, the monitor will implement the procedures of the Paleontological Resources Mitigation and Monitoring Plan. If recovery of a large or unusually productive fossil occurrence is necessary, the following actions shall be taken:

1. The paleontological monitor shall immediately notify the project developer, who shall contact the Air Force.
2. Construction activities in the immediate vicinity of the site shall stop until authorization for work to continue is provided by the Air Force.
3. Treatment and subsequent donation of fossils to a repository, along with the preparation of a report documenting the absence or discovery of fossil-related resources will be performed in accordance with the Paleontological Resources Mitigation and Monitoring Plan.

3.6.5.2 Gen-tie Mitigation Measures

MM 3.6-1b: Cultural Resources Personnel Professional Qualifications Standard. The services of a qualified lead archaeologist meeting the secretary of the Interior's Standards for professional archaeology (U.S. Department of the Interior, 2008) shall be retained by the project proponent to carry out all mitigation measures related to archaeological, cultural and historical resources. A qualified archeological and Native American monitor may also be retained in order to work with and consult with the lead archaeologist.

1. All ground-disturbing activities within 50-feet of resources (site SS-S-23; SS-S-10; and SS-S-30) per Cultural Resources Assessment of the Gen-Tie Routes by Dudek (Appendix B7) shall be avoided. If these resources cannot be avoided, all ground-disturbing activities within the generation tie-line area shall be monitored by a Native American monitor representing at least one of the Consulting Tribes (Appendix A4), along with the lead or archeological monitor. An Archaeological Monitoring Plan shall be prepared prior to any ground disturbing activity. Ground disturbing activities include, but are not limited to: mowing, brush clearance, grubbing, excavation, trenching, grading, cut and roll vegetation clearing, drilling, equipment laydown or parking.
2. Should any discovery be found during ground work or ground disturbing activities, the qualified Native American monitor and/or qualified archaeological monitor would halt all work within 60-feet of the find and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. The lead archaeologist shall notify the applicant the Tribes and County of the discovery. All parties shall confer regarding the treatment of the discovered resource(s) and the lead archaeologist shall then prepare an Archaeological Treatment Plan for the discoveries. If consensus cannot be reached between all parties, the County shall make the final decision.
3. The archaeological monitor and qualified Native American monitor shall work under the supervision of the qualified archaeologist. The lead archaeologist, archaeological monitor, and qualified Native American monitor shall be provided all project documentation related to cultural resources within the project area prior to commencement of ground disturbance activities. Project documentation shall include but not be limited to previous cultural

studies, surveys, maps, drawings, etc. Any modifications or updates to project documentation, including construction plans and schedules, shall immediately be provided to the qualified archaeologist, and archaeological monitor, and qualified Native American monitor.

4. The lead archaeologist, archaeological monitor, and Native American monitor shall keep daily logs and the qualified archaeologist shall submit monthly written updates to the Kern County Planning and Natural Resources Department. After monitoring has been completed, the qualified archaeologist shall prepare a monitoring report detailing the results of monitoring. All discoveries are subject to proper recordation on California Department of Parks and Recreation (DPR) forms. All final documentation shall be submitted to the Kern County Planning and Natural Resources Department, to the consulting Tribes (Appendix A4) and to the Southern San Joaquin Valley Information Center at California State University, Bakersfield.

MM 3.6-2b: Worker Cultural Awareness Training Program. Prior to the commencement of ground-disturbing activities, and for the duration of generation tie-line installation and decommissioning activities, a Worker Cultural Awareness Training Program shall be provided to all construction personnel prior to their commencing work at the generation tie-line sites.

1. The training shall be prepared and conducted by a qualified archaeologist in consultation or conjunction with the qualified Native American Monitor. The training may be discontinued when ground disturbance is completed or suspended, but must resume when ground-disturbing activities resume.
2. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural/paleontological training. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker.
3. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department.

The purpose of the Cultural Awareness Training Program shall be to inform and train construction personnel of the types of cultural resources that may be encountered during construction of the gen-tie lines, and to bring awareness to personnel of actions to be taken in the event of a cultural resources discovery. This may include: a discussion of applicable cultural resources statutes, regulations and related enforcement provisions; an overview of the prehistoric and historic environmental setting and context, as well as current cultural information regarding local tribal groups; samples or visuals of artifacts that might be found in the project area; a discussion of what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction; and procedures to be followed in the event of an inadvertent discovery (see Mitigation Measure MM 3.6-4b).

MM 3.6-3b: Archaeological and Native American Resources Monitoring. Archaeological and Native American monitoring are both subject to consultation with the Native American Tribal Resource Agencies under Section106. As such, the requirements of various stakeholders must be considered and accommodation made wherever feasible. Therefore, specific archaeological and Native American monitoring details cannot be included herein. However, at a minimum it is expected that the developer shall retain a qualified archaeological monitor for project-related ground disturbing activities for the purpose of identifying and avoiding adverse effects to significant archaeological resources.

1. Ground disturbing activities include, but are not limited to, brush clearance, grubbing, excavation, trenching, grading, and drilling. Areas requiring monitoring for the generation tie-line installation and the level of monitoring shall be developed by the Tribal Stakeholders and Kern County Planning and Natural Resources Department, in coordination with the qualified archaeologist, and shall be detailed in the Cultural Resources Management Plan for the gen-tie line route. Any archaeological monitors shall be, or work under the direct supervision of, a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's standards for professional archaeology and shall be approved by Kern County Planning and Natural Resources Department. The monitors shall be familiar with the types of historical and prehistoric resources that could be encountered within the project area.
2. The archaeological monitor shall ensure that personnel performing ground-disturbing activities are displaying the appropriate decal on their hardhat demonstrating their Cultural Resources (CR) Awareness training under Mitigation Measure MM 3.6-2b. The archaeological monitors shall record soil samples and artifact/ecofact material as warranted for analysis. The archaeological monitors shall be present on the generation tie-line site according to a schedule as detailed in the Cultural Resources Management Plan for the gen-tie line route. The monitors shall maintain a daily log of activities, which will be appended to a final monitoring report that shall be submitted to the Kern County Planning and Natural Resources Department, and Southern San Joaquin Valley Archaeological Information Center. Specific monitoring reporting procedures shall be detailed in the Cultural Resources Management Plan for the gen-tie line routes.
3. Section 106 consultation with Native American tribes may result in a need for one or more Native American monitors. The specific nature of the monitoring activity performed by Native American tribes can vary and therefore the requirements for Native American monitors will be elicited as part of consultation.

MM 3.6-4b: Inadvertent Discoveries. During generation tie-line construction and decommissioning, should cultural or paleontological resources be discovered, all activity within 60 feet of the find shall stop and a qualified paleontologist shall be contacted to assess the significance of the find. The area of the discovery shall be marked off as an Environmentally Sensitive Area (ESA) and a physical demarcation/barrier constructed. All entrance to the area shall be avoided until the discovery is assessed by the qualified archaeologist and/or Native American representative, if the discovery involves resources of interest to Native American tribes, including but not limited to prehistoric archaeological sites or tribal cultural resources. If the qualified archaeologist, in consultation with the consulting Native American tribe(s) determines the resource is significant (i.e., qualifies as a historic property, historical resource, or unique archaeological resource), then the archaeologist shall determine appropriate avoidance measures or other appropriate mitigation. Per CEQA Guidelines Section 15126.4(b)(3), project redesign and preservation in place shall be the preferred means to avoid impacts to significant historical resources. Consistent with CEQA Guidelines Section 15126.4(b)(3)(c), if it is demonstrated that resources cannot be feasibly avoided, the qualified archaeologist, in consultation with the consulting Tribes, shall develop additional treatment measures which may include data recovery or other appropriate measures or shall implement the provisions for mitigative treatments detailed in the Paleontological Resources Management Plan for the gen-tie line route (as required by MM 3.6-5b). Work shall not resume within 60 feet of the discovery until permission is received from the Paleontologist and/or Native American representative(s), and if in disagreement, the Kern County Planning and Natural Resources Department shall be consulted.

MM 3.6-5b: Paleontological Resources Mitigation and Monitoring Plan. The developer shall retain a qualified paleontologist to prepare a Paleontological Resources Mitigation and Monitoring Plan for implementation during construction of the generation tie lines. The minimum requirement for professional paleontological work is a 4-year undergraduate program and Master of Science degree, although a doctoral degree may be required for certain specialties; a qualified paleontologist is one that has experience in research, field, and laboratory methods for paleontological resources, including experience in fossil salvage, stratigraphy, fossil preparation, and identification, with experience in California. The Paleontological Resources Mitigation and Monitoring Plan shall be submitted to the Kern County Planning and Natural Resources Department for review and approval prior to the start of grading or construction and shall include the following:

1. Procedures for the discovery, recovery, and salvage of paleontological resources encountered during construction, if any, in accordance with standards for recovery established by the Society of Vertebrate Paleontology.
2. Verification that the developer has an agreement with a recognized museum repository (such as the Natural History Museum of Los Angeles County), for the disposition of recovered fossils and that the fossils shall be prepared prior to submittal to the repository as required by the repository (e.g., prepared, analyzed at a laboratory, curated, or cataloged).
3. Description of monitoring reports that will be prepared, which shall include daily logs and a final monitoring report with an itemized list of specimens found to be submitted to the Kern County Planning and Natural Resources Department and the Southern San Joaquin Valley Information Center at California State University, Bakersfield within 90 days of the completion of monitoring. Consultation of any find in the right-of-way shall be conducted the Southern San Joaquin Valley Information Center at California State University, Bakersfield.
4. The project applicant shall provide for the permanent curation of recovered materials from lands under the County of Kern jurisdiction at a federally approved curation facility, such as the Tejon Tribal Curation Facility.

MM 3.6-6b: Worker Paleontological Resources Awareness Training Program. Prior to the commencement of ground-disturbing activities, and for the duration of construction activities, a Worker Paleontological Awareness Training Program shall be provided to all construction personnel prior to their commencing work on installation of generation tie-line sites.

1. The training may be performed in concert with the archaeological/cultural resources training prior to the onset of the generation tie-line installation. The training shall be prepared and conducted by a qualified paleontologist. The training may be in the form of a video.
2. The training may be discontinued when ground disturbance is completed or suspended, but must resume when ground-disturbing activities resume.
3. A sticker shall be placed on hard hats indicating that the worker has completed the environmental/cultural/paleontological training.
4. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker.

5. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the Kern County Planning and Natural Resources Department.
6. The purpose of the Paleontological Awareness Training Program shall be to inform and train construction personnel of the types of paleontological resources that may be encountered during construction, and to bring awareness to personnel of actions to be taken in the event of a paleontological resources discovery. This may include: a discussion of applicable paleontological resources statues, regulations and related enforcement provisions; samples or visuals of fossils that might be found in the project area; implementation of the Paleontological Resources Mitigation and Monitoring Plan; and procedures to be followed in the event of an inadvertent discovery.
7. Consultation on any find in the right-of-way shall be conducted with the Natural History Museum of Los Angeles County.

MM 3.6-7b: Paleontological Resources Monitoring. The developer shall provide for a qualified paleontologist or an individual working under direct supervision of a qualified paleontologist to monitor construction activities in areas where deeper excavations may be needed (greater than 10 feet). The duration and timing of the monitoring, which shall be set in the Paleontological Resources Mitigation and Monitoring Plan, shall be determined by the qualified paleontologist, in consultation with the Tribal Stakeholders and Kern County Planning and Natural Resources Department and based on the grading plans. Initially, all excavation or grading activities deeper than 10 feet shall be monitored. However, during the course of monitoring, if the paleontologist can demonstrate that the level of monitoring should be reduced, the paleontologist, in consultation with the Tribal Stakeholders and Kern County Planning and Natural Resources Department, may adjust the level of monitoring to circumstances warranted. If a resource is encountered, the monitor will implement the procedures of the Paleontological Resources Mitigation and Monitoring Plan. If recovery of a large or unusually productive fossil occurrence is necessary, the following actions shall be taken:

1. The paleontological monitor shall immediately notify the project developer, who shall contact the Tribal Stakeholders and Kern County Planning and Natural Resources Department.
2. Construction activities in the immediate vicinity of the site shall stop until authorization for work to continue is provided by the Tribal Stakeholders and Kern County Planning and Natural Resources Department.
3. Treatment and subsequent donation of fossils to a repository, along with the preparation of a report documenting the absence or discovery of fossil-related resources will be performed in accordance with the Paleontological Resources Mitigation and Monitoring Plan.

MM 3.6-8b: Discovery of Human Remains. In the event of inadvertent discovery of human remains during construction and decommissioning of generation tie-lines, all work shall be halted and the Kern County Coroner shall be contacted to evaluate the remains and follow the procedures and protocols set forth in Section 15064.4 (e)(1) of the California Environmental Quality Act Guidelines. At that time, the project proponent shall contact the Kern County Planning and Natural Resources Department regarding the find. If the County Coroner determines the remains are Native American in origin, the Coroner shall contact the Native American Heritage Commission in accordance with Health and Safety Code Section 7050.5 subdivision c, and Public Resources Code Section 5097.98 (as amended by Assembly Bill 2641). The Native American Heritage Commission shall designate a Most Likely Descendent (MLD) for the remains per Public Resources Code

5097.98. Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et. seq.) directing identification of the next-of-kin will apply.

3.6.6 Residual Impacts after Mitigation

Compliance with the terms and conditions of Mitigation Measures MM 3.6-1a through MM 3.6-10a for the solar facility portion of the project and Mitigation Measures MM 3.6-1b through 3.6-8b for the gen-tie portion of the project would reduce but may not fully avoid Proposed Action–related effects on cultural resources. Any cultural resources damaged or destroyed by project construction, even if subjected to mitigation measures, would be permanently lost from the archaeological record. This would make the cultural resources unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available. In addition, some contemporary Native American stakeholders consider disturbance of buried artifacts to cause direct cultural and spiritual harm. Therefore, although some prescribed treatments may resolve adverse effects to historic properties (i.e., NRHP-eligible resources) under NHPA Section 106, direct effects to cultural resources may remain significant under NEPA and CEQA.

3.7 Geology, Minerals, and Soils

3.7.1 Affected Environment

This EIS/EIR section describes the affected environment for geology, minerals, and soils characteristics of the project sites, potential impacts to geology and soils associated with construction and operation of the proposed project, including the regulatory and environmental settings, and mitigation measures that would reduce these impacts where applicable.

The technical information and analysis provided in this section is based on the National Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2017); Mineral Land Classification of Southeastern Kern County (Koehler, 1999); and the Preliminary Geologic Hazards and Soils Report prepared by Petra Geotechnical, Inc. on July 20, 2012, which is included as Appendix B9 of this EIS/EIR.

3.7.1.1 Scoping Issues Addressed

No comments related to geology, minerals, and soils were received.

3.7.1.2 Regulatory Framework

Federal

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1997 to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program." To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended by the Earthquake Hazards Reduction Program Reauthorization Act of 2004 (Public Law 108-360).

NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results., The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards such as those to which the proposed project would be required to adhere (FEMA, 2013).

Clean Water Act (Erosion Control)

The Clean Water Act (CWA) (33 U.S. Code (USC) 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point

source and certain nonpoint source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Projects that disturb 1 acre or more of land are generally required to obtain NPDES coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit), Order No. 99-08-DWQ. The General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which includes best management practices (BMPs) to protect stormwater runoff, including measures to prevent soil erosion. Requirements of the federal CWA and associated SWPPP requirements are described in further detail in Section 3.17, *Hydrology and Water Quality*.

Development standards would require the proposed project to comply with the seismic design criteria found in the Uniform Building Code (UBC). In addition, an adequate design for drainage facilities and pre-construction soil and grading studies would be required. Although seismic design standards have been established to reduce many of the structural problems that occur during major earthquakes, the UBC was revised in 1998 as follows:

- Upgrade the level of ground motion used in the seismic design of buildings.
- Add site amplification factors based on local soil conditions.
- Improve the way ground motion is applied in detailed design.

Construction on Edwards AFB must also comply with the UBC, Unified Facility Criteria, Specifications and Guides, and Department of Defense United Facilities Criteria and Specifications, including Unified Facilities Guide Specifications 48-14-00. These criteria generally rely on commercial standards.

State

Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) of 1972 (revised in 1994) is the State law that addresses hazards from earthquake fault zones. The purpose of this law is to mitigate the hazard of surface fault rupture by regulating development near active faults. As required by the Act, the State has delineated Earthquake Fault Zones (formerly Special Studies Zones) along known active faults in California.

The Seismic Hazards Mapping Act of 1990

In accordance with California Public Resources Code Chapter 7.8, Division 2, the California Geological Survey is directed to delineate seismic hazard zones. The purpose of the act is to reduce the threat to public health and safety and minimize the loss of life and property by identifying and mitigating seismic hazards, such as those associated with strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by the California Geological Survey in their land use planning and permitting processes. In accordance with the Seismic Hazards Mapping Act, site-specific geotechnical investigations must be performed prior to permitting most urban development projects within seismic hazard zones.

The Division of Oil, Gas, and Geothermal Resources (DOGGR) is a division within the California Department of Conservation responsible for supervising the drilling, operation, maintenance, plugging, and abandonment of oil, gas, and geothermal wells. DOGGR's regulatory program promotes the sensitive development of oil, natural gas, and geothermal resources in California through sound engineering practices, prevention of pollution, and implementation of public safety programs. To implement this regulatory program, DOGGR requires avoidance of building over or near plugged or abandoned oil and gas wells, or requires the remediation of wells to current DOGGR standards. DOGGR requirements would apply to the Proposed Action in the event that an oil, gas or geothermal well is encountered on the project site.

The Surface Mining and Reclamation Act of 1975 requires the State Geologist to classify land into Mineral Resource Zones (MRZs) according to its known or inferred mineral potential. The primary goal of mineral land classification is to ensure that the mineral potential of land is recognized by local government decision-makers and considered before land-use decisions are made that could preclude mining. MRZs in the vicinity of the proposed project are presented in the environmental setting section above. The Proposed Action would not conflict with the Surface Mining and Reclamation Act of 1975.

The California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a Seismic Design Category (SDC) for a project, as described in Chapter 16 of the CBC. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC in accordance with Chapter 16 of the CBC. For Seismic Design Categories D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-

specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

Local

Kern County General Plan

Construction of the Proposed Action would be subject to policies and regulations contained within the Kern County General Plan (KCGP): Land Use, Open Space, and Conservation Elements. The KCGP identifies goals, policies, and implementation measures to prevent loss of life, reduce personal injuries and property damage, and minimize economic and social diseconomies as a result of natural disasters by directing development to areas that are not hazardous or physically or environmentally constrained. Further, the KCGP establishes goals and policies to protect areas of important mineral, petroleum, and agricultural resources for future use. The policies, goals, and implementation measures in the Kern County General Plan that pertain to geology and soils and are applicable to the proposed project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development, such as the Proposed Action. These measures are not listed below, but as stated in Chapter 1, *Introduction*, all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

1.3 Physical and Environmental Constraints

Goal

Goal 1: To strive to prevent loss of life, reduce personal injuries, and property damage, minimize economic and social diseconomies resulting from natural disaster by directing development to areas which are not hazardous.

Policy

Policy 1: Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained (Map Code 2.1 [Seismic Hazard], Map Code 2.2 [Landslide], Map Code 2.3 [Shallow Groundwater], Map Code 2.5 [Flood Hazard], Map Codes from 2.6 – 2.9, Map Code 2.10 [Nearby Waste Facility], and Map Code 2.11 [Burn Dump Hazard]) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

Implementation Measure

Measure N: Applicants for new discretionary development should consult with the appropriate Resource Conservation District and the California Regional Water Quality Control Board regarding soil disturbances issues.

Policy

Policy 1: The County shall require development for human occupancy to be placed in a location away from an active earthquake fault in order to minimize safety concerns.

Implementation Measures

Measure B: Require geological and soils engineering investigations in identifying significant geologic hazard areas in accordance with the Kern County Code of Building Regulations.

Measure C: The fault zones designated in the Kern County Seismic Hazard Atlas should be considered significant geologic hazard areas. Proper precautions should be instituted to reduce seismic hazard, whenever possible in accordance with State and County regulations.

Policies

Policy 1: Determine the liquefaction potential at sites in areas of shallow groundwater (Map Code 2.3) prior to discretionary development and determine specific mitigation to be incorporated into the foundation design, as necessary, to prevent or reduce damage from liquefaction in an earthquake.

Policy 3: Reduce potential for exposure of residential, commercial, and industrial development to hazards of landslide, land subsidence, liquefaction, and erosion.

1.9 Resource

Goals

Goal 1: To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations that will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources or diminish the other amenities that exist in the County.

Goal 2: Protect areas of important mineral, petroleum, and agricultural resource potential for future use.

Goal 3: Ensure the development of resource areas minimize effects on neighboring resource lands.

Goal 6: Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment.

Policies

Policy 14: Emphasize conservation and development of identified mineral deposits.

Policy 17: Lands classified as MRZ-2, as designated by the State of California, should be protected from encroachment of incompatible land uses.

Policy 25: Discourage incompatible land use adjacent to Map Code 8.4 (Mineral and Petroleum) areas.

Implementation Measures

Measure H: Use the California Geological Survey's latest maps to locate mineral deposits until the regional and statewide importance mineral deposits map has been completed, as required by the Surface Mining and Reclamation Act.

Measure K: Protect oilfields and mineral extraction areas through the use of appropriate implementing zone districts: A (Exclusive Agriculture), DI (Drilling Island), NR (Natural Resource), or PE (Petroleum Extraction).

The Kern County Safety Element, shown below, includes goals and implementation measures to minimize injury and property damage by requiring geological and soils engineering investigations to identify significant geologic hazard areas in accordance with the Kern County Code of Building Regulations.

Kern County General Plan Chapter 4: Safety Element

Goal

Goal 1: Minimize injuries and loss of life and reduce property damage.

4.3 Seismically Induced Surface Rupture, Ground Shaking, and Ground Failure

Policy

Policy 1: The County shall require development for human occupancy to be placed in a location away from an active earthquake fault in order to minimize safety concerns.

Implementation Measure

Measure B: Require geological and soils engineering investigations in identifying significant geologic hazard areas in accordance with the Kern County Code of Building Regulations.

4.5 Landslides, Subsidence, Seiche, and Liquefaction

Policies

Policy 1: Determine the liquefaction potential at sites in areas of shallow groundwater (Map Code 2.3) prior to discretionary development and determine specific mitigation to be incorporated into the foundation design, as necessary, to prevent or reduce damage from liquefaction in an earthquake.

Policy 3: Reduce potential for exposure of residential, commercial, and in industrial development to hazards of landslide, land subsidence, liquefaction, and erosion.

The Mojave Specific Plan includes policies intended to minimize potential damage to structures and loss of life that could result from earthquakes. Safety measures required by the UBC and Kern County Seismic Safety Element during construction or new buildings are also incorporated.

The South of Mojave–Elephant Butte Specific Plan includes implementation measures for compliance with the requirements of the California Health and Safety Code and the Kern County Health Department with regard to extraction and processing of mineral resources or cessation of such operations.

The West Edwards Road Settlement Specific Plan identifies policies and implementation measures to use zoning and other land use controls to regulate future development on land that is geologically unsound or when physical hazards have been identified. Site development will be accomplished in compliance with the Kern County Flood Damage Prevention Ordinance and the Kern County Zoning Ordinance.

The Willow Springs Specific Plan includes policies, goals, and implementation measures that promote seismic safety and healthful living environments. Safety measures required by the UBC and Kern County Seismic Safety Element during construction of new buildings are also incorporated.

Kern County Code of Building Regulations (Title of the Ordinance Code of Kern County)

The Kern County Code of Building Regulations requires all construction to conform to Chapter 17.08, Building Code, 2016 Edition, (CCR Title 24), which imposes substantially the same requirements as the International Building Code, 2015 Edition, with some modifications and amendments, as the entire county is located in Seismic Zone 4, which was previously used in the Uniform Building Code to denote areas of highest risk for earthquake and ground motion.

Chapter 17.28. Kern County Grading Code

The Kern County Grading Code was established with the intent to safeguard life, limb, property, and the public welfare by regulating grading on private property. All requirements of the Kern County Grading Code would be applied during implementation of the proposed project. All required grading permit(s) would be obtained prior to commencement of construction activities. Sections of the Grading Code that are particularly relevant to geology and soils are Section 17.28.140 Erosion Control and Section 17.28.170 Grading Inspection.

Section 17.28.140. Erosion Control

A. Slopes. The faces of cut-and-fill slopes shall be prepared and maintained to control erosion. This control may consist of effective planting. Protection for the slopes shall be installed as soon as practicable and prior to calling for final approval. Where cut slopes are not subject to erosion due to the erosion-resistant character of the materials, such protection may be omitted.

B. Other Devices. Where necessary, check dams, cribbing, riprap, or other devices or methods shall be employed to control erosion and provide safety.

C. Temporary Devices. Temporary drainage and erosion control shall be provided as needed at the end of each work day during grading operations, such that existing drainage channels would not be blocked. Dust control shall be applied to all graded areas and materials. This shall consist of applying water or another approved dust palliative for the alleviation or prevention of dust nuisance. Deposition of rocks, earth materials or debris onto adjacent property, public roads or drainage channels shall not be allowed.

Section 17.28.170. Grading Inspection

A. General. All grading operations for which a permit is required shall be subject to inspection by the building official. Professional inspection of grading operations and testing shall be provided by the civil engineer, soils engineer and the engineering geologist retained to provide such services in accordance with Subsection 17.28.170(E) for engineered grading and as required by the building official for regular grading.

B. Civil Engineer. The civil engineer shall provide professional inspection within such engineer's area of technical specialty, which shall consist of observation and review as to the establishment of line, grade and surface drainage of the development area. If revised plans are required during the course of the work they shall be prepared by the civil engineer.

C. Soils Engineer. The soils engineer shall provide professional inspection within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The soils engineer shall provide sufficient observation during the preparation of the natural ground and placement and compaction of the fill to verify that such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of this chapter. Revised recommendations relating to conditions differing from the approved soils engineering and engineering geology reports shall be submitted to the permittee, the building official and the civil engineer.

D. Engineering Geologist. The engineering geologist shall provide professional inspection within such engineer's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. Revised recommendations relating to conditions differing from the approved engineering geology report shall be submitted to the soils engineer.

E. Permittee. The permittee shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this code, and the permittee shall engage consultants, if required, to provide professional inspections on a timely basis. The permittee shall act as a coordinator between the consultants, the contractor and the building official. In the event of changed conditions, the permittee shall be responsible for informing the building official of such change and shall provide revised plans for approval.

F. Building Official. The building official may inspect the project at the various stages of the work requiring approval to determine that adequate control is being exercised by the professional consultants.

G. Notification of Noncompliance. If, in the course of fulfilling their responsibility under this chapter, the civil engineer, the soils engineer, or the engineering geologist finds that the work is not being done in conformance with this chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the permittee and to the building official. Recommendations for corrective measures, if necessary, shall also be submitted.

H. Transfer of Responsibility. If the civil engineer, the soils engineer, or the engineering geologist of record is changed during the course of the work, the work shall be stopped until:

1. The civil engineer, soils engineer, or engineering geologist, has notified the building official in writing that they will no longer be responsible for the work and that a qualified replacement has been found who will assume responsibility.

2. The replacement civil engineer, soils engineer, or engineering geologist notifies the building official in writing that they have agreed to accept responsibility for the work.

National Pollutant Discharge Elimination System Permit Requirements

The Kern County NPDES Program serves as a regulatory substitute to ensure water quality within the County is maintained during all construction activities, regardless of discharge location. The Kern County NPDES Program applies to all projects that would disturb more than 1 acre and requires the developer to submit a form to the Kern County Public Works Department including information regarding background information on construction activities and to identify whether stormwater runoff has the potential to discharge into waters of the United States, be contained onsite, or discharge indirectly offsite into a river, lake, stream, or offsite drainage facility. The

anticipated discharge area would determine the need for a SWPPP. In the case of the project, no waters of the United States are present onsite, however, the project would still require the development of a SWPPP and Best Management Practices (BMPs) for Kern County Public Works approval.

3.7.1.3 Environmental Setting

This section of the EIS/EIR describes the existing physical environmental conditions in the vicinity of the project as they relate to the potential impacts on geology, minerals, and soils of the Proposed Action.

Regional Setting

Minerals

Public policy states that the nonrenewable characteristic of mineral deposits necessitates the careful and efficient development of mineral resources in order to prevent the unnecessary waste of these deposits due to careless exploitation and uncontrolled urbanization. Management of these mineral resources will protect not only future development of mineral deposit areas, but will also guide the exploitation of mineral deposits so that adverse impacts caused by mineral extraction will be reduced or eliminated. This section discusses the existing conditions related to mineral resources within the project area, which includes the project site. The State Geologist has classified 2,971 square miles of land in Kern County as MRZs of varying significance. Mineral resources in Kern County include numerous mining operations that extract a variety of materials, including sand and gravel, stone, gold, dimensional stone, limestone, clay, shale, gypsum, pumice, decorative rock, silica, and specialty sand. Significant mineral resources located in southeastern Kern County include borates, limestone, gold, and dimension stone. MRZs are classified as follows (Koehler, 1999):

MRZ-1: **Areas where adequate geologic information indicates that no significant minerals deposits are present, or where it is judged that little likelihood exists for their presence.**

MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves. Land included in MRZ-2a is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain inferred mineral resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral occurrences of undetermined economic significance. Further exploration could result in reclassification of all or part of these areas into the MRZ-2a or MRZ-2b categories.

MRZ-3b: Areas containing inferred mineral occurrences of undetermined economic significance. Further exploration could result in the reclassification of all or part of these areas into the MRZ-2a or MRZ-2b categories.

MRZ-4: Areas containing no known mineral occurrence.

Table 3.7-1, *Classified Mineral Resources within Kern County*, demonstrates the classified mineral resources within Kern County that are part of the MRZ-2 group and, therefore, have a demonstrated mineral significance (as opposed to the MRZ-3 group, which has an undetermined mineral significance).

TABLE 3.7-1
CLASSIFIED MINERAL RESOURCES WITHIN KERN COUNTY

Mineral Resource	MRZ Classification	Number of Areas	Total Acreage
Borates	MRZ-2a and 2b	2	2,564
Limestone	MRZ-2a	4	2,008
	MRZ-2b	2	157
Silica	MRZ-2a	1	119
Pozzolan (essential cement additive)	MRZ-2b	1	72
Gold	MRZ-2a	3	849
Gold	MRZ-2b	8	6,619
Dimension Stone	MRZ-2a	2	527

SOURCE: Koehler, 1999a.

Petroleum Resources

Kern County is one of the richest oil-producing counties in the United States. The valley floor area of Kern County and the surrounding lower elevations of the mountain ranges contain numerous deposits of oil and gas resources, a major economic resource for the County.

Kern County produces more oil than any other county in California, and is one of the nation's leading petroleum-producing counties. Mineral and petroleum resources are basic to Kern County's economy. As new recovery technologies come into use, petroleum extraction should continue in economic importance. There are currently 71 active fields in production. However, no petroleum resources have been discovered to date in the western Mojave Desert region.

Sand and Gravel

Sand and gravel have been determined to be important resources for construction, development, and physical maintenance, from highways and bridges to swimming pools and playgrounds. The availability of sand and gravel affects construction costs, tax rates, and affordability of housing and commodities. The State of California has statutorily required the protection of sand and gravel operations. Because transportation costs are a significant portion of the cost of sand and gravel, the long-term availability of local sources of this resource is an important factor in maintaining the economic attractiveness of a community to residents, business, and industry. The major resources of sand and gravel in Kern County are in stream deposits along the eastern side of the San Joaquin Valley and in the Sierra Nevada foothills, approximately 35 miles northwest of the project site, and in alluvial fan deposits along the north flank of the San Emidio and Tehachapi Mountains at the southern end of the county, approximately 20 miles west of the project site.

Borax

Borax, a borate mineral (a compound that contains boron and oxygen), was discovered and put into production in 1872 in Nevada and later, in 1881, in Death Valley. Ironically, for 5 years the route traveled by Pacific Coast Borax Company's famous twenty-mule team trains would pass within 15 miles of a buried deposit that would produce in about 6 minutes the equivalent tonnage hauled by the mule team during each trip. The discovery of borates in southeastern Kern County was accidental, when in 1913 a water well penetrated lakebeds containing colemanite (calcium borate). In 1927, underground mining of the minerals kernite and borax began at a mine near Boron currently operated by Rio Tinto Minerals (State Mine ID #91-15-0022) and continued until 1957, when underground operations ceased and open-pit mining began, eventually becoming the largest open-pit mine in California Annually, over 3.3 million tons are removed from this mine, which supplies about 50 percent of the world's supply of borates.

Limestone

Limestone (carbonate rocks) were initially quarried in Kern County in 1888 as a source of lime. By 1909 the limestone resources were used for the manufacture of Portland cement during the construction of the first Los Angeles aqueduct. Limestone has been mined continuously since 1921, just northeast of Tehachapi. The Tehachapi Plant was joined by California Portland Cement Company's Mojave Plant in 1955 and National Cement Company's Lebec Plant in 1976, making Portland cement production second only to borates in terms of economic importance to the region.

Dimension Stone

Dimension stone is natural rock material quarried for the purpose of obtaining blocks or slabs that meet specifications as to size (width, length, and thickness) and shape. Color, grain texture and pattern and surface finish, durability, strength, and polishability are important selection criteria in determining dimension stone. Deposits of marble, sandstone, schist, and other rocks in Kern County have been sources of modest tonnages of building stones that have been utilized as dimension stone, field stone, rubble, and flagstone. Most of the dimension stone (marble and flagstone) was mined before 1904; field stone and flagstone have been mined mostly since about 1952 in the area around Randsburg. There are three permitted dimension stone mining operations near Randsburg, and permits have been issued to allow production to continue beyond 2070.

Precious Minerals/Gold

In terms of total dollar value and number of deposits, gold is the most important metallic mineral commodity that has been produced in Kern County. The earliest mining in Kern County was in 1851 at placer gold deposits in Greenhorn Gulch, which drains into the Kern River about midway between Democrat Springs and Miracle Hot Springs. The first lode mining was in 1852, and by 1865 gold was being produced in four districts around the Kern River. Gold was first prospected in eastern Kern in the 1860s, with the two largest mines being established in the 1890s. The Yellow Aster and Golden Queen mines located in eastern Kern have yielded almost half of the total gold output of the county. The principal sources of silver in Kern County have been deposits in eastern Kern County.

Geology and Soils

The proposed project is located in the northwestern portion of the Mojave Desert Geomorphic Province, a broad interior region of isolated mountains separated by desert plains. The Mojave Desert Geomorphic Province lies between the northeast-trending Garlock Fault on the north and the northwest-trending San Andreas Fault on the south (Petra Geotechnical, 2012).

Kern County is located in one of the more seismically active areas of California and may at any time be subject to moderate to severe ground shaking. This hazard exists because elastic strains accumulate deep within the earth, resulting in movement along a fracture zone that releases large amounts of energy. Seismicity is the geographic and historical distribution of earthquakes, including their frequency, intensity, and distribution. Seismic hazards include surface rupture, ground shaking, liquefaction, landslides, subsidence, and expansive soils.

Regional Faults

The faults discussed below, as well as other regional faults, contribute to the potential ground shaking at the subject site. Based on probabilistic analysis from the California Geological Survey, peak ground acceleration at the site is estimated to be approximately 0.31g (based on 10 percent probability of being exceeded in 50 years). This probability analysis takes into account the earthquake histories, slip rates, and potential earthquake magnitudes of significant regional faults (Petra Geotechnical, 2012).

Garlock Fault

The Garlock Fault extends eastward approximately 150 miles from its point of origin at the San Andreas Fault near Lebec, California. The Garlock Fault zone is a prominent geologic feature and marks the northern boundary of the Mojave Block in southern California. Although the fault has not experienced a surface rupture during an earthquake in historic times, there have been significant earth movements recorded along the Garlock Fault zone. The most recent earthquake was a magnitude 5.7 near the town of Mojave on July 11, 1992, and it is believed to have been triggered by the Landers earthquake 2 weeks prior. The Garlock fault is considered active, meaning it has shown evidence of movement over the last 11,000 years, and it has even shown movement in recent years. Based on the known history and seismic context, the Garlock Fault is capable of causing substantial ground movement in the project area, which is just 11 miles southeast of the fault trace (Petra Geotechnical, 2012).

San Andreas Fault

The San Andreas Fault is the most prominent fault in California and runs approximately 650 miles from the Mendocino Escarpment in the north to the Imperial Valley in the south, and is considered the boundary between the North American Plate and the Pacific Plate. The last major earthquake on this segment of the San Andreas Fault was the Fort Tejon earthquake in 1857, which likely caused a surface rupture of at least 200 miles. This is an active fault capable of strong earthquakes in the region (Petra Geotechnical, 2012). The project site is located approximately 22 miles north of the fault.

White Wolf Fault

The White Wolf Fault is a southeast-northwest–trending reverse fault with a length of approximately 45 miles. The White Wolf Fault ruptured on July 21, 1952, causing an earthquake with a magnitude of 7.5 and a series of aftershocks. The 1952 earthquake is the only event recorded in historic time (Petra Geotechnical, 2012). The project site is located approximately 32 miles southeast of the fault.

Mojave Desert Northwest-Trending Faults

Northwest-trending lateral strike-slip faults are fairly common in the project region in the western Mojave. A group of relatively small faults, including the Tyler Horse, Willow Springs, and Cottonwood Faults, lies approximately 9 miles southwest of the project site. Given the size of these faults, they are not as likely as the northwest-trending faults to the east of the site to produce large earthquakes. The northwest trending faults located to the east of the site include the Lockhart Fault (23 miles northeast of the site), the Mirage Valley Fault (18 miles to the southeast), the Leuhman-Kramer Hills Fault (18 miles to the east) and the Blake Ranch Fault (21 miles to the southeast). This eastern fault group may be capable of generating earthquakes similar to the 1999 Hector Mine and the 1992 Landers earthquakes (Petra Geotechnical, 2012).

Local Geological Setting Hazards

Soils and Topography

The proposed project soils are composed of silty sand and finer grained soils. The project sites are relatively flat with areas of 0 to 5 percent slope and drainage to the east. With a maximum slope of 5 percent; landslides are not anticipated to occur due to the sites' flat topograghy (Appendix B9, Petra Geotechnical, 2012).

Fault Rupture

Ground surface rupture occurs along an earthquake fault when movement on a fault deep within the earth breaks through to the surface. Fault ruptures almost always occur along the surface expression of identified traces of active faults within zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by ground shaking. Fault creep is the slow rupture of the earth's crust.

The site is not located within a currently delineated state of California Alquist-Priolo Earthquake Fault Zone, and no known active or potentially active faults have been identified onsite. The state of California defines an active fault as one that has experienced displacement in the last 11,000 years, and a potentially active fault as one has experienced displacement in the last 2.6 million years; potentially active faults are not placed in Alquist-Priolo Fault Zone Study Areas as shown in **Figure 3.7-1**, *Alquist Priolo Fault Zones in the Project Site Vicinity*. Therefore, the potential for active fault rupture at the project site is considered low.

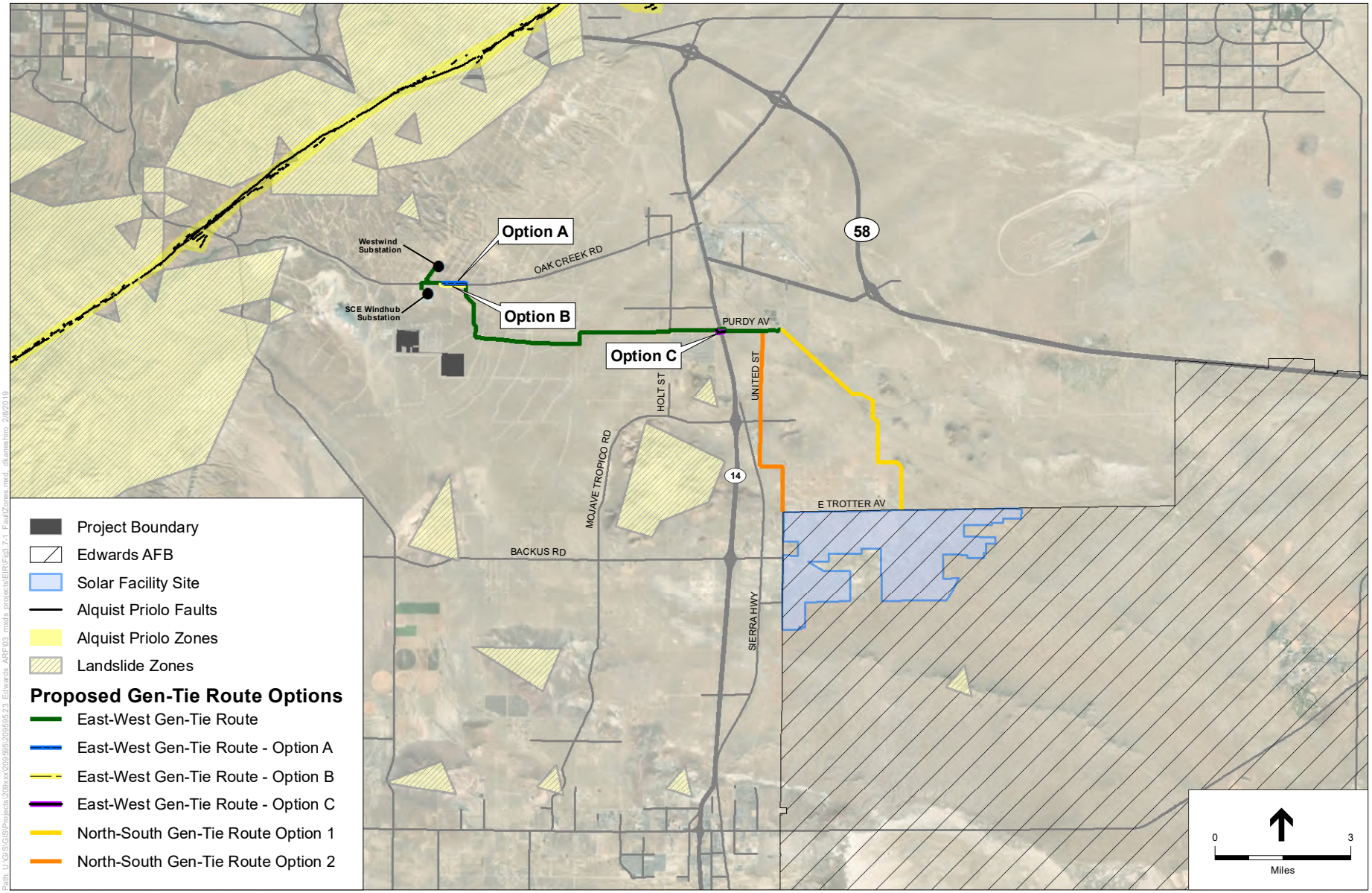


Figure 3.7-1: ALQUIST PRIOLO FAULT ZONES IN THE PROJECT SITE VICINITY

Seismic Hazards

Seismicity is the geographic and historical distribution of earthquakes, including their frequency, intensity, and distribution. Seismic hazards include surface rupture, ground shaking, liquefaction, landslides, subsidence, expansive soils, and soil erosion. As described above, the western and the southern end of the San Joaquin Valley is bordered by major active fault systems, making Kern County a historically active seismic area. The Kern County General Plan provides fault locations and policies and implementation measures for seismic hazards. Because of the numerous geologic fractures in the earth's crust within the San Joaquin Valley, all development within the valley floor area of Kern County is subject to seismic hazards. The proposed project is not located in the San Joaquin Valley.

Ground Shaking

The southern California region is characterized by, and has a history of fault stress and associated seismic activity, including ground shaking, which can result in damage associated with ground lurching, structural damage, and liquefaction. During a seismic event, the project site may be subjected to high levels of ground shaking due to proximity to active faults in the area. The type and magnitude of seismic hazards affecting the project site would be dependent on the distance to causative faults, and the intensity and magnitude of the seismic event. Earthquakes are classified by their magnitude, which is a measure of the amount of energy released during an event that can suggest how much ground shaking it will generate. The largest faults in the area are the San Andreas and Garlock Faults, which are both considered active.

TABLE 3.7-2
CHARACTERISTICS AND ESTIMATED EARTHQUAKES FOR REGIONAL FAULTS

Earthquake (Fault)	Approximate Distance to Proposed Project (miles/kilometers)	Maximum Credible Earthquake Magnitude
Garlock	11/17.7	6.9
San Andreas	22/35.4	8.0

Source: Petra Geotechnical, Inc., 2012

Expansive Soils

Expansive soils are characterized by their potential "shrink-swell" behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in certain fine-grained clay sediments from the process of wetting and drying. Clay minerals such as smectite, bentonite, montmorillonite, beidellite, vermiculite, and others are known to expand with changes in moisture content. The near-surface soils observed at the proposed solar facility include loamy sands, sandy loams, gravelly clay loams, and clay loams (NRCS, 2017). Clay-type soils may be expansive. Based on the sandy alluvium at the site, the potential for expansive soil at the site is considered to be low. However, based on the National Resources Conservation Service (NRCS) soil description, soils in the west-central portion of the site may contain some clay and may have a higher potential for expansion.

Liquefaction

Liquefaction generally occurs when saturated, loose materials (e.g., sand or silty sand) are weakened and transformed from a solid to a near-liquid state as a result of increased pore water pressure. The increase in pressure is caused by strong ground motion from an earthquake. The project site's susceptibility to liquefaction is a function of depth, density, groundwater level, and magnitude of an earthquake. Liquefaction-related phenomena can include lateral spreading, ground oscillation, flow failure, loss of bearing strength, subsidence, and buoyancy effects.

For liquefaction to occur, the soil must be saturated (e.g., with shallow groundwater) and be relatively loose. Liquefaction more often occurs in areas underlain by young alluvium where the groundwater table is higher than 50 feet below ground surface (bgs). The project site is located in the Closter Subbasin of the Antelope Valley Groundwater Basin, where bedrock barriers contribute to a more shallow depth of groundwater compared to deeper levels in the Antelope Valley to the south of the project site. A well on the western portion of the site recorded a depth to groundwater of approximately 49 feet bgs in 2010, and its shallowest record is 33 feet bgs in 1956 (Petra Geotechnical, 2012). Based on review of available groundwater data in the site vicinity, groundwater is reported to be historically shallow and there is a potential for liquefaction at the project site.

Landslides

Various general types of ground failures that might occur as a consequence of severe ground shaking at the site include landsliding, ground subsidence, and ground lurching. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, subsoils, and groundwater conditions, in addition to other factors. Based on the site conditions and gently sloping topography, the potential for landslides is considered unlikely at the site (Petra Geotechnical, 2012).

Local Setting

The project site (solar facility and gen-tie corridor) is located in a relatively flat alluvial plain surrounded by low hills and buttes with a gentle eastern slope where drainage flows to the east. Only a few minor drainage channels are located within the project area. The project site is underlain by quaternary alluvium, with an isolated outcrop of exposed granitic rock near the western edge of the site. Granitic rock may also be present along the eastern edge of the site near the Bissel Hills. Observations from the site suggest that the local alluvium is made up primarily of silty sand, although soils may be finer grained in the central portion of the site (Petra Geotechnical, 2012).

The project area designated for solar panel development on Edwards AFB is not located on land designated as an MRZ. However, the preliminary off-base gen-tie routing options are located on land designated as MRZ-3a (Au) and MRZ-3b (Au-3), which is defined as "areas containing mineral deposits the significance of which cannot be evaluated from available data." The closest mine to the proposed project is the Pauley D.G. Mine, roughly 2.5 miles away.

3.7.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences relating to geology, minerals, and soils for the proposed project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant. Measures to mitigate (i.e, avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

3.7.2.1 Assessment Methods/Methodology

The analysis of potential impacts of the Proposed Action and alternatives regarding geology, minerals, and soils focuses on possible impacts to the health and safety of the public and the environment. Impacts are identified and evaluated based on relevant lead agency standards, policies, and guidelines. Information regarding geology, minerals, and soils were reviewed for this analysis, including the following:

- Preliminary Geotechnical Report (Petra Geotechnical, 2012)
- National Resources Conservation Service, Web Soil Survey (NRCS, 2017)
- Mineral Land Classification of Southeastern Kern County (Koehler, 1999)

The analysis presents the evaluation of the potential for the proposed project to create risks or cause direct or indirect impacts to related to its geological and mineralogical setting. This analysis was conducted by examining preliminary geotechnical data, Kern County Planning documents, geographical information systems, and publicly available natural resource maps as noted above.

3.7.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant related to geology, minerals, and soils if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15064.7 (a)), and standards of professional practice. A project would have a significant impact on geology, minerals, and soils if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault
    2) Strong seismic ground shaking
    3) Seismic-related ground failure, including liquefaction
    4) Landslides
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risk to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Similarly, a project would have a significant adverse effect on mineral resources if it would:

- Result in the loss of availability of a known mineral resources that would be of value to the region and the residents of the state.
- Result in the loss of availability or a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan.

The County determined in the NOP (see Appendix A) that the following environmental issue area would result in no impacts or less-than-significant impacts and it was therefore scoped out of requiring further review in this EIS/EIR.

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, involving landslides.

3.7.3 Analysis of Environmental Effects

3.7.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Construction

The project site is located in a highly seismic region within the influence of several fault systems, including the San Andreas and Garlock Fault systems, which are capable of generating ground motions that could affect the project area. The developer is required to design project infrastructure to withstand substantial ground shaking in accordance with applicable California Building Code seismic design standards, Kern County Building Code, Chapter 17.08, and as recommended by a California registered professional engineer in the required site-specific geotechnical review.

Prior to the issuance of grading permits, the developer would be required to retain a qualified geotechnical engineer to design the project facilities to withstand probable seismically induced ground shaking at the site in accordance with local and state building code requirements. All grading and construction onsite would adhere to the specifications, procedures, and site conditions contained in the final design plans, which would be fully compliant with the seismic recommendations of a California-registered professional engineer in accordance with California and Kern County Building Code requirements. The required measures would encompass site preparation, foundation specifications, and corrosion protection measures for buried metal. The final gen-tie structural design would be subject to approval and follow-up inspection by the Kern County Public Works Department and by the Air Force for the solar facility. Final design requirements would be provided to the onsite construction supervisor and the Kern County Building Inspector to ensure compliance. A copy of the approved design would be submitted to the Kern County Planning and Natural Resources Department. Implementation of these building code

requirements and local agency enforcement would reduce impacts from ground shaking to less than significant.

Construction of the proposed project would involve earthwork activities that could expose soils to erosion. The proposed project is located on relatively flat topography and would not involve grading steep slopes; however, earthmoving and construction activities could loosen soil, and the removal of vegetation could contribute to soil loss and erosion by wind and stormwater runoff. The requirements of the Kern County NPDES Program provide that a SWPPP would be prepared and implemented. The SWPPP would specify BMPs to prevent disturbed soils (such as topsoil), from moving offsite. Also, pursuant to the Kern County Grading Ordinance (Section 17.28.070), the developer would be required to submit grading plans accompanied by a soils engineering report, engineering geology report, and drainage calculations in order to obtain required grading permits. Permit requests for grading are submitted to the Kern County Public Works Department for discretionary review and approval once all requirements have been satisfactorily met. Given the relatively flat nature and pervious surface of the project site, it is unlikely that soil erosion from water runoff would occur with implementation of the construction SWPPP and the required BMPs. As a result, the proposed project would have no adverse effects related to erosion.

Because of the flat topography of the solar facility site, it is anticipated that minimal grading would be required to prepare the site for photovoltaic (PV) modules. To the extent possible, existing topsoil would likely be left in place. However, it is anticipated that vegetation removal could be necessary for trenching utilities and road construction. However, where grading is necessary, conventional grading would be performed throughout the project site in accordance with County grading requirements to facilitate proper drainage. Earthworks scrapers, paddlewheels, haul vehicles, and graders may all be used to perform grading. Perimeter and access roads may be additionally compacted to 90 percent or greater, as required to support construction and emergency vehicles. The grading would be balanced onsite. It is anticipated that up to 400 acre-feet (130,340,571 gallons) of water would be used during construction of the solar facility.

Operation and Maintenance

The final PV array, gen-tie line, and associated infrastructure would be located in the highly seismic southern California region within the influence of several fault systems, including the San Andreas and Garlock Fault systems. However, the site is not located within a state of California Alquist-Priolo Earthquake Fault Zone. The nearest active fault to the project site is the Garlock Fault, which is approximately 11 miles away. Within the project site, there is an absence of any known active faults that cross or come anywhere near the project site, there would be no adverse effects related to fault rupture (Petra Geotechnical, 2012).

Groundwater in the area of the project site has been shown to be as high as 33 feet below ground surface in 1956 but based on regional trends is likely much deeper today. The required site-specific geotechnical investigation of the site would include an evaluation for the presence of liquefaction and also include measures to mitigate any liquefiable soils, if present.

The site is not located in an area undergoing fluid withdrawal that could generate a potential subsidence effect. While the project could include sourcing underlying groundwater resources for

panel washing, these uses would be temporary and periodic such that subsidence would not be anticipated. Water could also be supplied from offsite sources and trucked onsite

The cleaning operations would likely occur three to four times per year; however, this is not expected to result in soil erosion because of the infrequency of cleaning activities, drainage control design, and site characteristics (e.g., flat topography and pervious surface). It is anticipated that up to 30 acre-feet per year (AFY) of water would be used for operations and maintenance activities. No adverse effects related to erosion are expected to occur during the operational phase of the proposed project.

However, unconsolidated alluvial sediments may have a potential for settlement and/or soil collapse if proposed improvements are not designed appropriately. The proposed project is required to comply with California and Kern County Building Code requirements to withstand the effects of settlement or collapsible soils. With adherence to all applicable building code regulations, the project would avoid potential impacts to structures resulting from unstable soils, and no adverse effects would be expected.

The operational phase of the proposed project could include service buildings and warehouses. This facility could include development of a septic system. Wastewater generated during operation is not expected to be significant because the project would only require up to 10 full-time employees. Soils onsite could have expansive qualities potentially impacting operation of the proposed septic system. The preliminary geotechnical investigation concluded that soils comprise a mixture of clayey and sandy soils that may be expansive. The proposed project would be required to be designed to comply with California and Kern County Building Code requirements to withstand the effects of expansive soils (Petra Geotechnical, 2012). With adherence to all applicable building code regulations, the project would avoid impacts resulting from potentially expansive soils on the project site, and no adverse effects related to expansive soils would be expected.

The project site is not designated as a mineral recovery area by the Kern County General Plan, nor is it zoned for or immediately adjacent to lands designated as Mineral and Petroleum areas by the Kern County General Plan. Both the solar facility and the gen-tie route sites are classified as MRZ-3 by the Department of Conservation Mining and Geology Board, which is defined as “areas containing mineral deposits the significance of which cannot be evaluated from available data” (Petra Geotechnical, 2012). Due to the abundance of similar mineralogical materials in the surrounding desert region around the project site, the potential of the project to result in the loss of availability of a known mineral resource is not anticipated and no adverse effects would occur.

Additionally, the nearest mine is the Pauley D.G. Mine located approximately 2.5 miles southwest of the site. At this distance, the proposed project would not interfere with any existing mining operations at the mine, and would not result in the loss of land designated for mineral and petroleum. Also, based on the absence of historical surface mining in the area, the potential for surface mining at the site is considered extremely low. As such, the project would not result in the loss of availability of a known mineral resource and no adverse effects to future mineral resources are anticipated.

The site is not located on land designated for mineral resources by the Kern County General Plan or any of the applicable specific plans. Implementation of the proposed project would not directly or indirectly conflict with any local general plan, specific plan, or other land use plan. In addition, because the life expectancy of the project is approximately 35 years, access to any mineral resources that may be identified at the site in the future would not be permanently lost or impacted, and the proposed project would not result in a significant impact.

Decommissioning

At the completion of the lease, a decommissioning environmental impact analysis will be completed to assess how all site improvements will be dismantled and removed from the site consistent with the lease and environmental requirements in place at the time of decommissioning. Upon decommissioning, the solar site could be converted to other uses in accordance with applicable land use regulations in effect at that time.

CEQA: Impact Significance Determination

Impact 3.7-1: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.

Primary ground rupture is ground deformation that occurs along the surface trace of the causative fault during an earthquake. The proposed project would introduce structures and people to the project site and could thus expose people and structures to seismic risks. While the project site is located in a highly seismic southern California region within the influence of several fault systems, it is not transected by a known active or potentially active fault and is not located within a State of California Alquist-Priolo Earthquake Fault Zone. The nearest active fault to the project site is the Garlock Fault, which is located approximately 12 miles to the northwest of the solar facility site. Due to the distance from the nearest active fault to the project site, the potential for surface fault rupture at the project site is considered negligible. Implementation of Mitigation Measure MM 3.7-1a for the solar facility portion of the project site would require the preparation of a geotechnical study. The gen-tie portion of the project requires no mitigation, only compliance with seismic safety requirements. Both of these requirements would ensure that impacts remain less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.7-1a, (see Section 3.7.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

Impact 3.7-2: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.

With implementation of Mitigation Measures MM 3.7-1b for the solar facility and MM 3.7-2b for the gen-tie portion of the project site, the developer would be required to design project infrastructure to withstand substantial ground shaking in accordance with applicable California Building Code seismic design standards, Kern County Building Code, Chapter 17.08, and as

recommended by a California registered professional engineer in the site-specific geotechnical review.

Prior to the issuance of grading permits, the developer would be required to retain a qualified geotechnical engineer to design the project facilities to withstand probable seismically induced ground shaking at the sites. All grading and construction onsite would adhere to the specifications, procedures, and site conditions contained in the final design plans, which would be fully compliant with the seismic recommendations by the California-registered professional engineer in accordance with California and Kern County Building Code requirements. The required measures would encompass site preparation, foundation specifications, and protection measures for buried metal. The Kern County Public Works Department would require submittal of three sets of plans for building department review prior to issuance of a building permit. The final structural design would be subject to approval and follow-up inspection by the Kern County Building Inspection Department. Final design requirements would be provided to the onsite construction supervisor and the Kern County Building Inspector to ensure compliance. A copy of the approved design would be submitted to the Kern County Planning and Planning and Natural Resources Department. Implementation of these building code requirements and local agency enforcement would reduce impacts from ground shaking to less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.7-1b and MM 3.7-2b (see Section 3.7.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

Impact 3.7-3: The project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic related ground failure, including liquefaction.

All structures constructed as part of the project would be required to comply with applicable California and Kern County Building Code earthquake construction standards. Mitigation Measure 3.7-1 requires preparation of a Phase II geotechnical evaluation to determine the appropriate structural design required to avoid potential liquefaction impacts. With adherence to all applicable regulations, including Kern County Building Code requirements and with implementation of Mitigation Measures MM 3.7-1a for the solar facility portion of the project site, and MM 3.7-1b and MM 3.7-3b for the gen-tie portion of the project site, the project would avoid impacts related to liquefaction, and potential impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measure MM 3.7-1a, MM 3.7-1b, and MM 3.7-3b (see Section 3.7.5 for mitigation measures)

Level of Significance

Impacts would be less than significant.

Impact 3.7-4: The project would result in substantial soil erosion or the loss of topsoil.

Construction of the proposed project would involve earthwork activities including vegetation and debris removal, grading, excavation and trenching, that could expose soils to erosion. The proposed solar facility and gen-tie line are located on relatively flat topography and would not involve grading steep slopes; however, earthmoving and construction activities could loosen soil, and the removal of vegetation could contribute to soil loss and erosion by wind and stormwater runoff. The requirements of the Kern County NPDES Program provide that a SWPPP would be prepared and implemented. The SWPPP would specify BMPs to prevent disturbed soils (such as topsoil), from moving offsite. Also, pursuant to the Kern County Grading Ordinance (Section 17.28.070), the proposed project would be required to submit grading plans accompanied by a soils engineering report, engineering geology report, and drainage calculations in order to obtain required grading permits. Permit requests for grading are submitted to the Kern County Public Works Department for discretionary review and approval once all requirements have been satisfactorily met. Given the relatively flat nature and pervious surface of the project site, it is unlikely that soil erosion from water runoff would occur with implementation of the construction SWPPP and the required BMPs. As a result, the proposed project would have less than significant impacts related to erosion.

Project operation would include cleaning the solar panels three to four times a year with water and would require approximately 30 acre-feet per year (AFY).; however, this is not expected to result in soil erosion because of the infrequency of water use and site characteristics (e.g., flat topography and pervious surface). No impacts are expected to occur during the operational phase of the proposed project.

Mitigation Measures

Implementation of Mitigation Measures MM 3.7-4b is required.

Level of Significance

Impacts would be less than significant.

Impact 3.7-5: The project is located on a geologic unit or soil that is unstable, or that would become unstable as result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

The project site is located on a flat alluvial fan and surface soils include loose soils. Because of the generally flat topography on and adjacent to the project site, there is no potential for landslides to occur, and because of building code requirements, the project would be designed to avoid effects of liquefaction or lateral spreading. Additionally, the site is not located in an area undergoing fluid withdrawal that could generate a potential subsidence effect.

However, unconsolidated alluvial sediments may have a potential for settlement and/or soil collapse. The gen-tie portion of the proposed project is required to comply with California and Kern County Building Code requirements to withstand the effects of settlement or collapsible soils. With adherence to all applicable building code regulations, as well as implementation of Mitigation Measures MM 3.7-1b and MM 3.7-4b for the gen-tie portion of the project site, which would require preparation of a Soil Erosion and Sedimentation Control Plan, the project would avoid

potential impacts to structures resulting from unstable soils, and potential impacts would be less than significant.

Mitigation Measures

Implementation of Mitigation Measures MM 3.7-1b and MM 3.7-4b.

Level of Significance

Impacts would be less than significant.

Impact 3.7-6: The project is located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

Expansive soils are fine-grained soils (generally high-plasticity clays) that can undergo a significant increase in volume with an increase in water content and a significant decrease in volume with a decrease in water content. Changes in the water content of a highly expansive soil can result in severe distress to structures constructed on or against the soil. The mineralogy and percentage of clay-sized particles present in soil determine the potential for expansive behavior. The preliminary geotechnical investigation concluded that soils comprise a mixture of clayey and sandy soils that may be expansive. The proposed project is required to be designed to comply with California and Kern County Building Code requirements to withstand the effects of expansive soils. With adherence to all applicable building code regulations, as well as implementation of Mitigation Measures MM 3.7-1b through MM 3.7-4b for the gen-tie portion of the site, the project would avoid impacts resulting from potentially expansive soils on the project site and along the gen-tie line route, and impacts related to expansive soils would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.7-1b through MM 3.7-4b (see Section 3.7.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

Impact 3.7-7: The project has soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater.

The project may include structures to accommodate onsite employees that would require wastewater disposal. A solar facility septic system and leach field would be constructed to comply with applicable requirements of the Kern County Environmental Health Services Division. The Environmental Health Services Division's "Standards for Land Development" include the aspects of sewage and preservation of environmental health. The standards are intended to safeguard the public health, and are enforced by the County's Environmental Health Division. Mitigation Measure 3.7-2a requires that a site-specific soil permeability report be prepared for the solar facility portion of the project site, prior to project approval to evaluate the feasibility of using individual sewage disposal systems, in accordance with the standards of good public health and engineering practices. No permanent restroom facilities would be required for the gen-tie route construction.

With implementation of Mitigation Measure MM 3.7-2a during facility construction impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measure 3.7-2a (see Section 3.7.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

Impact 3.7-8: The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

The project site is not zoned as a mineral recovery area by the Kern County Zoning Ordinance , nor is it identified as being located in an MRZ by the State Geologist or the Kern County General Plan. The closest land designated as 8.4, Mineral and Petroleum Resources, is located roughly 1.2 miles northwest of the solar facility site and roughly 0.75 miles west of the gen-tie route.

There are active mines and petroleum extraction facilities located near the project site. The closest is the Pauley D.G. Mine, located approximately 2.5 miles to the southwest. Development of the proposed solar facility would occur within the boundaries of the project site and would not preclude use or access to the Pauley D.G. Mine or any other mining or petroleum extraction facilities. As a result, the proposed project would not interfere with nearby mineral extraction operations, and would not result in the loss of land designated for mineral resources. Also, based on the absence of historical surface mining in the area, the potential for surface mining at the site is considered extremely low. As such, the project would not result in the loss of availability of a known mineral resource and the potential impact to future mineral resources is less than significant.

There are no known mineral resources within the project area; therefore, the project would not have a significant impact on future mineral development. The installation of PV panels on the site would not preclude future onsite mineral resource development, should the site be determined to contain mineral resources in the future.

Mitigation Measures

No mitigation measures are required.

Level of Significance

Impacts would be less than significant.

Impact 3.7-9: The project would result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

The project site contains no locally important mineral resource recovery sites delineated in the Kern County General Plan, Mojave Specific Plan, South of Mojave-Elephant Butte Specific Plan, West Edwards Road Settlement Specific Plan, or Actis Interim Rural Community Plan. Furthermore, the installation of PV panels and gen-tie line would not preclude future onsite mineral resource

development, should the site be determined to contain mineral resources in the future. Therefore, loss of availability of mineral resources impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance

Impacts would be less than significant.

3.7.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Construction of Alternative B would result in the same impacts to geology, minerals, and soils as described for Alternative A. However, because of the reduced size of this alternative, the geographic area within Alternative B would be smaller than for Alternative A, which would limit the area within which soil and mineral resources could be impacted and geologic hazards could occur. The amount of surface soils that would be disturbed under this alternative would be reduced compared to Alternative A. Consequently, these impacts associated with the construction of Alternative B would be reduced relative to Alternative A.

Operation and Maintenance

Alternative B would result in the same impacts to geology, minerals, soils, and seismic hazards as described in Alternative A. However, because of the reduced size of this alternative, the geographic area within Alternative B would be smaller than for Alternative A. The improvements proposed under Alternative B would be required to adhere to the same building code requirements that would account for any changes that might exist in the geotechnical characteristics between the two areas. Therefore, this smaller size would limit the area within which geotechnical hazards and their impacts to the public, workers, and the environment could result, but they would still be accounted for in the site-specific building code requirements. Overall, these impacts associated with the operation and maintenance of Alternative B would be reduced relative to Alternative A.

Decommissioning

Alternative B would undergo the same decommissioning process as Alternative A. However, because of the reduced size of this alternative, the geographic area within Alternative B would be smaller than for Alternative A. This smaller size would limit the area within which soil and mineral resources could be impacted and geologic hazards could occur. Consequently, these impacts associated with the decommissioning operation and maintenance of Alternative B would be reduced relative to Alternative A.

CEQA: Impact Significance Determination

Because Alternative B would result in approximately one-third the physical development of Alternative A, it is likely that this alternative would result in reduced impacts to geology, minerals, and soils. However, because the construction and operation of the facility would remain the same as in Alternative A, the significance conclusions for the impacts identified for each phase of

Alternative B (construction, operation and maintenance, decommissioning) would be the same as described above for Alternative A. Impacts relating to geology, minerals, and soils would be less than significant.

Mitigation Measures

Implementation of Mitigation Measures MM 3.7-1b through MM 3.7-4b and MM 3.7-2a.

Level of Significance

Impacts would be less than significant.

3.7.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Construction

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described above. There would be no construction, grading, or employees on the site; therefore, there would be no potential for impacts to geology, minerals, or soils to occur. Thus, Alternative C would not substantially affect geology, minerals, and soil during the construction, operation and maintenance, and decommissioning phases.

CEQA: Impact Significance Determination

Alternative C would result in no impacts concerning geologic risk factors, soils, or mineral resources.

Mitigation Measures

No mitigation measures are required.

Level of Significance

No Impact.

3.7.4 Cumulative Impact Analysis

3.7.4.1 NEPA: Cumulative Environmental Effects and Their Significance

All of the cumulative projects listed in Table 3-1 would be subject to relatively similar seismic hazards with some of the projects located to the north possibly having slightly higher risks due to their closer proximity to the Garlock fault. However, all of these projects, which consist primarily of other solar and wind energy projects, would be required to comply with the CBC, and other applicable safety regulations. All of the cumulative projects identified in Table 3-1 would result in less than significant impacts similar to the proposed project due to compliance with local and state building code compliance as well as local grading ordinances and permit requirements. The significance determination is based on the fact that seismic and other geotechnical hazards such as subsidence, expansive soils, and other unstable soil conditions are site-specific and cannot be combined to cause cumulatively significant effects from geologic impacts. Consequently, the

Proposed Action would generally not be affected by, nor would the project affect, other development approved by Kern or Los Angeles Counties nor the Cities of Lancaster or Palmdale. The incremental contribution of the proposed project to cumulative geologic impacts would not be cumulatively considerable.

Development of the project, with implementation of the regulatory requirements discussed above, would not result in adverse impacts related to exposing persons or structures to geologic, soils, or seismic hazards. Although the entire region is a seismically active area, geologic and soil conditions vary widely within a short distance, making the cumulative context for potential impacts resulting from exposing people and structures to related risks one that is more localized or even site specific. Similar to the Proposed Action, other projects in the area would be required to adhere to the same California and Kern County Building Codes, for example, which would reduce the risk to people and property to less than significant levels. While future seismic events cannot be predicted, adherence to all federal, state, and local programs, requirements, and policies pertaining to building safety and construction would limit the potential for injury or damage to a less-than-significant level. Therefore, the project, combined with past, present, and other foreseeable development in the area, would not result in a cumulative adverse impacts related to exposure of people or structures to risk related to geologic hazards, soils, and/or seismic conditions.

As previously discussed, there are no known mineral resources within either the solar facility or the gen-tie route area; therefore, the project would not have a significant impact on future mineral development. In addition, the installation of PV panels on the site would not preclude future onsite mineral resource development, should the site be determined to contain mineral resources in the future. The vast majority of the cumulative projects identified in Table 3-1 would also be required to comply with applicable land use designations and their associated soil and mineral resource considerations. Therefore, the proposed solar facility and gen-tie routes would not significantly contribute to impacts on soil or mineral resources in the cumulative scenario.

The cumulative setting for soil erosion consists of existing, planned, proposed, and reasonably foreseeable land use conditions in the region. The vast majority of the cumulative projects identified in Table 3-1 would be similarly required to comply with applicable codes, standards, and permitting requirements (e.g., preparation of a SWPPP) to control erosion potential. Development of the project site has the potential to contribute to soil erosion and loss of topsoil during construction when soils are potentially exposed to the effects of wind and water erosion. These potential impacts would be mitigated through the implementation of the SWPPP and BMPs as would the other 90 cumulative projects that disturb more than 1 acre which includes the vast majority. Impacts associated with erosion are mitigated on a project-by-project basis through compliance with the aforementioned requirements, which would reduce the overall cumulative impact to a less than significant level.

3.7.4.2 CEQA: Cumulative Impact Significance Determination

As described above, development of the project, with implementation of the regulatory requirements discussed above, would not result in adverse cumulative impacts related to geology, minerals, and soils, largely due to the fact that geologic impacts tend to be site-specific and are not cumulatively considerable. However, implementation of Mitigation Measures MM 3.7-1b through

MM 3.7-4b and MM 3.7-2a would provide additional procedures to ensure that cumulative impacts would be less than significant.

Mitigation Measures

Implementation of Mitigation Measures MM 3.7-1b through MM 3.7-4b and MM 3.7-2a

Level of Significance

Cumulative impacts would be less than significant.

3.7.5 Mitigation Measures

3.7.5.1 Solar Facility Mitigation Measures

MM 3.7-1a: Conduct Geotechnical Study. Prior to the issuance of building or grading permits for the project, the project proponent shall conduct a full geotechnical study to evaluate soil conditions and geologic hazards on the project site and submit it to the Kern County Public Works Department for review and approval.

1. The geotechnical study must be signed by a California-registered and licensed professional engineer and must include, but not limited to, the following:
    a. Location of fault traces and potential for surface rupture and groundshaking potential;
    b. Maximum considered earthquake and associated ground acceleration;
    c. Potential for seismically induced liquefaction, landslides, differential settlement, and mudflows;
    d. Stability of any existing or proposed cut-and-fill slopes;
    e. Collapsible or expansive soils;
    f. Foundation material type;
    g. Potential for wind erosion, water erosion, sedimentation, and flooding;
    h. Location and description of unprotected drainage that could be impacted by the proposed development; and,
    i. Recommendations for placement and design of facilities, foundations, and remediation of unstable ground.
2. The project proponent shall determine the final siting of project facilities based on the results of the geotechnical study and implement recommended measures to minimize geologic hazards. The project proponent shall not locate project facilities on or immediately adjacent to a fault trace. All structures shall be offset at least 100 feet from any mapped fault trace. Alternatively, a detailed fault trenching investigation may be performed to accurately locate the fault trace(s) to avoid sighting improvements on or close to these fault structures and to evaluate the risk of fault rupture. After locating the fault, accurate setback distances can be proposed.
3. The Kern County Public Works Department shall evaluate any final facility siting design developed prior to the issuance of any building or grading permits to verify that geological constraints have been avoided.

MM 3.7-2a: Assess Soil Permeability. Prior to the issuance of any building permit for the operation and maintenance facilities, the project proponent shall obtain all required permits and

approvals from Kern County Environmental Health Services Division, and shall implement all required conditions regarding the design and siting of the septic system and leach fields. A site specific analysis of soil permeability shall be performed by a California licensed Geotechnical Engineer that demonstrates project soils can adequately support the use of a septic disposal system. A plan shall be submitted to the Kern County Planning and Natural Resources Department indicating siting or the septic system and leach fields as approved by the Kern County Environmental Health Services Division.

3.7.5.2 Gen-tie Mitigation Measures

MM 3.7-1b: Conduct Geotechnical Study. Prior to the issuance of building or grading permits for the generation tie-line installation, the project proponent shall conduct a full geotechnical study to evaluate soil conditions and geologic hazards on the sites and submit it to the Kern County Public Works Department for review and approval.

1. The geotechnical study must be signed by a California-registered and licensed professional engineer and must include, but not limited to, the following:
    a. Location of fault traces and potential for surface rupture and groundshaking potential;
    b. Maximum considered earthquake and associated ground acceleration;
    c. Potential for seismically induced liquefaction, landslides, differential settlement, and mudflows;
    d. Stability of any existing or proposed cut-and-fill slopes;
    e. Collapsible or expansive soils;
    f. Foundation material type;
    g. Potential for wind erosion, water erosion, sedimentation, and flooding;
    h. Location and description of unprotected drainage that could be impacted by the proposed development; and,
    i. Recommendations for placement and design of facilities, foundations, and remediation of unstable ground.
2. The project proponent shall determine the final siting of project facilities based on the results of the geotechnical study and implement recommended measures to minimize geologic hazards. The project proponent shall not locate project facilities on or immediately adjacent to a fault trace. All structures shall be offset at least 100 feet from any mapped fault trace. Alternatively, a detailed fault trenching investigation may be performed to accurately locate the fault trace(s) to avoid sighting improvements on or close to these fault structures and to evaluate the risk of fault rupture. After locating the fault, accurate setback distances can be proposed.
3. The Kern County Public Works Department shall evaluate any final generation tie line siting design developed prior to the issuance of any building or grading permits to verify that geological constraints have been avoided.

MM 3.7-2b: Comply Seismic Safety Requirements. Prior to the issuance of grading permits, the project proponent shall retain a California registered and licensed engineer to design the project generation tie lines to withstand probable seismically induced ground shaking at the site. All grading and construction onsite shall adhere to the specifications, procedures, and site conditions

contained in the final design plans, which shall be fully compliant with the seismic recommendations of the California-registered professional engineer.

1. The procedures and site conditions shall encompass site preparation, foundation specifications, and protection measures for buried metal.
2. The final structural design shall be subject to approval and follow-up inspection by the Kern County Building Inspection Department. Final design requirements shall be provided to the onsite construction supervisor and the Kern County Building Inspector to ensure compliance. A copy of the approved design shall be submitted to the Kern County Planning and Natural Resources Department.

MM 3.7-3b: Generation-Tie Line Grading. The project proponent shall limit grading to the minimum area necessary for construction of the generation tie lines. Prior to the initiation of construction, the project proponent shall retain a California registered and licensed professional engineer to submit final grading earthwork plans prior to generation tie line construction to the Kern County Public Works for approval.

MM 3.7-4b: Soil Erosion and Sedimentation Control Plan. The project proponent shall prepare a Soil Erosion and Sedimentation Control Plan to mitigate potential loss of soil and erosion. The plan shall be prepared by a California registered and licensed civil engineer or other authorized professional and submitted for review and approval by the Kern County Engineering, Surveying and Permit Services Department.

1. The Soil Erosion and Sedimentation Control Plan shall include, but is not limited to, the following:
    a. Best Management Practices to minimize soil erosion consistent with Kern County grading requirements and the California Regional Water Quality Control Board requirements pertaining to the preparation and approval of a Stormwater Pollution Prevention Plan (Best Management Practices recommended by the Kern County Public Works Department shall be reviewed for applicability);
    b. Provisions to maintain flow in washes, should it occur, throughout generation tie-line construction;
    c. Provisions for site revegetation using native seed mix;
    d. Sediment collection facilities as may be required by the Kern County Public Works Department;
    e. A timetable for full implementation, estimated costs, and a surety bond or other security as approved by the County; and
    f. Other measures required by the County during permitting, including long-term monitoring (post-construction) of erosion control measures until generation tie-line site stabilization is achieved.

3.7.6 Residual Impacts after Mitigation

The full evaluation of soil conditions and geologic hazards on the project site will establish procedures and measures to safeguard and maintain the health, safety, and welfare of the citizens of the county. No residual impacts after mitigation are anticipated.

3.8 Greenhouse Gas Emissions

3.8.1 Affected Environment

This section of the EIS/EIR presents the affected environment for greenhouse gas (GHG) emissions in the project area, including the regulatory and environmental settings. It also describes the impacts associated with GHGs that would result from implementation of the project, and, as necessary, mitigation measures that would reduce these impacts. Information in this section is based primarily on the February 2018 memorandum Air Quality and Greenhouse Gas Emissions Methodology and Emissions Calculations (Dudek 2018). This memorandum is presented in Appendix B2 of this EIS/EIR.

The impact assessment for the project is also based upon a review of relevant literature and technical reports that include, but are not limited to, information and guidelines by the California Air Resources Board (CARB), the U.S. Environmental Protection Agency (USEPA), and the applicable provisions of the California Environmental Quality Act (CEQA).

3.8.1.1 Scoping Issues Addressed

The following scoping comments related to GHG emissions were provided by the Sierra Club and the California State Lands Commission. The following issues and concerns are addressed, where appropriate, in this section:

- A GHG emissions analysis should be included in the EIS/EIR.
- Specific GHG mitigation measures should be included.

3.8.1.2 Regulatory Framework

Federal

U.S. Environmental Protection Agency

The USEPA is responsible for implementing federal policy to address GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (sulfur hexafluoride [SF_6], hydrofluorocarbons [HFC], and perfluorocarbons [PFCs]) (USEPA, 2017). The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the ENERGY STAR labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In *Massachusetts v. Environmental Protection Agency* (Docket No. 05–1120), the United States Supreme Court held in April of 2007 that the USEPA has statutory authority under Section 202 of the Clean Air Act (CAA) to regulate GHGs. The Court did not hold that the USEPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. On

December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA. First, the USEPA adopted a Final Endangerment Finding for the six defined GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6). The Endangerment Finding is required before the USEPA can regulate GHG emissions under Section 202(a)(1) of the CAA consistently with the United States Supreme Court decision. The USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

President George W. Bush signed Executive Order (EO) 13432 on May 14, 2007, directing the USEPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision. EO 13432 was codified into law by the 2009 Omnibus Appropriations Law signed on February 17, 2009. The order sets goals in the areas of energy efficiency, acquisition, renewable energy, toxics reductions, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. In addition, the order requires more widespread use of Environmental Management Systems as the framework in which to manage and continually improve these sustainable practices. This executive order requires federal agencies to lead by example in advancing the nation's energy security and environmental performance by achieving the following goals:

- **Energy Efficiency:** Reduce energy intensity 30 percent by 2015, compared to a fiscal year (FY) 2003 baseline.
- **Greenhouse Gases:** Reduce greenhouse gas emissions through reduction of energy intensity 30 percent by 2015, compared to an FY 2003 baseline.
- **Renewable Power:** At least 50 percent of current renewable energy purchases must come from new renewable sources (in service after January 1, 1999).
- **Building Performance:** Construct or renovate buildings in accordance with sustainability strategies, including resource conservation, reduction, and use; siting; and indoor environmental quality.
- **Water Conservation:** Reduce water consumption intensity 16 percent by 2015, compared to an FY 2007 baseline.
- **Vehicles:** Increase purchase of alternative fuel, hybrid, and plug-in hybrid vehicles when commercially available.
- **Petroleum Conservation:** Reduce petroleum consumption in fleet vehicles by 2 percent annually through 2015, compared to an FY 2005 baseline.
- **Alternative Fuel:** Increase use of alternative fuel consumption by at least 10 percent annually, compared to an FY 2005 baseline.
- **Pollution Prevention:** Reduce use of chemicals and toxic materials and purchase lower risk chemicals and toxic materials.
- **Procurement:** Expand purchases of environmentally sound goods and services, including bio-based products.

- **Electronics Management:** Annually, 95 percent of electronic products purchased must meet Electronic Product Environmental Assessment Tool standards where applicable; enable ENERGY STAR features on 100 percent of computers and monitors; and reuse, donate, sell, or recycle 100 percent of electronic products using environmentally sound management practices.

In the most recent international climate change agreement adopted at the Paris UNFCCC climate conference in December 2015 ("Paris Accord"), the United States set its intended nationally determined contribution to reduce its greenhouse gas emissions by 26 to 28 percent below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28 percent. These targets were set with the goal of limiting global temperature rise to below 2 degrees Celsius and getting to the 80 percent emission reduction by 2050 (UNFCCC 2017). However, on June 1, 2017, President Donald Trump issued a statement announcing that "the United States will cease all implementation of the non-binding Paris Accord and the draconian financial and economic burdens the agreement imposes on our country. This includes ending the implementation of the nationally determined contribution and, very importantly, the Green Climate Fund which is costing the United States a vast fortune"(The White House 2017)

On August 3, 2015, President Obama and the USEPA announced the Clean Power Plan. The Clean Power Plan sets achievable standards to reduce carbon dioxide emissions by 32 percent from 2005 levels by 2030. (The White House 2016) This Plan establishes final emissions guidelines for states to follow in developing plans to reduce GHG emissions from existing fossil fuel-fired electric generating units (EGUs). Specifically, the USEPA is establishing: (1) carbon dioxide emission performance rates representing the best system of emission reduction for two subcategories of existing fossil fuel-fired EGUs, fossil fuel-fired electric utility steam generating units and stationary combustion turbines; (2) state-specific CO_2 goals reflecting the CO_2 emission performance rates; and (3) guidelines for the development, submittal and implementation of state plans that establish emission standards or other measures to implement the CO_2 emission performance rates, which may be accomplished by meeting the state goals. This final rule would continue progress already under way in the United States to reduce CO_2 emissions from the utility power sector (. On February 9, 2016, the Supreme Court stayed implementation of the Clean Power Plan pending judicial review. In addition, the USEPA is currently proposing to repeal the Clean Power Plan after completing a thorough review as directed by the executive order on Energy Independence (as discussed below) (USEPA 2016). In summary, the Clean Power Plan continues to face multiple legal challenges and its future is uncertain.

On March 28, 2017, President Donald Trump signed EO 13783, "Promoting Energy Independence and Economic Growth," which calls for:

- Review of the Clean Power Plan
- Review of the 2016 Oil and Gas New Source Performance Standards for New, Reconstructed, and Modified Sources
- Review of the Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units

- Withdrawal of Proposed Rules: Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014; Model Trading Rules; Amendments to Framework Regulations; and Clean Energy Incentive Program Design Details (USEPA 2017c)

Given this executive order, President Trump's decision to withdraw from the Paris Accord, and the Trump Administration's comments concerning climate change, the federal regulations on GHG emissions are currently uncertain.

Specific GHG regulations that USEPA has adopted to date include:

40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule. This rule requires mandatory reporting of GHG emissions from suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit more than 25,000 metric tons (MT) of carbon dioxide equivalent (CO2e) emissions per year (USEPA, 2018). Additionally, reporting of emissions is required for owners of SF_6- and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds. The proposed project would not be expected to trigger GHG reporting according to the rule; however, GHG emissions of the project are quantified in this EIS/EIR.

40 CFR Part 52. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. USEPA has mandated the application of Prevention of Significant Deterioration (PSD) requirements to facilities whose stationary source CO_2e emissions exceed 75,000 tons per year (USEPA, 2011). The project would not be expected to trigger PSD permitting as required by this regulation; however, GHG emissions associated with the project are quantified in this EIS/EIR. It should be noted that on June 23, 2014, The U.S. Supreme Court issued a decision addressing the application of stationary source permitting requirements to GHG emissions in *Utility Air Regulatory Group v. USEPA*. The court found that USEPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The court also said that the USEPA could continue to require that PSD permits, otherwise required based on emissions of conventional pollutants, contain limitations on GHG emissions based on the application of Best Available Control Technology) (USEPA, 2014).

Regulations for Greenhouse Gas Emissions from Passenger Cars and Trucks. On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the United States auto industry. The adopted federal standard applied to passenger cars and light-duty trucks for model years 2012 through 2016 and required an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO_2 per mile by model year 2016. The rule surpasses the prior Corporate Average Fuel Economy (CAFE) standards. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 passenger cars and light-duty trucks. By 2025, vehicles are required to achieve 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO_2 per mile. In January 2017, the USEPA recommended no change to the GHG standards for light-duty vehicles for model years 2022–2025 during the mid-year review. However, in March 2017, the USEPA announced they intend to reconsider the final determination issued in January 2017. In April, 2018, the USEPA and National Highway Traffic Safety Administration (NHTSA)

determined that the current standards are based on outdated information, and that more recent information suggests that the current standards may be too stringent and that the standards are not appropriate in light of the record before USEPA and, therefore, should be revised as appropriate (USEPA 2018). The USEPA and NHTSA thus withdrew the previous Final Determination issued by the agency on January 12, 2017. The USEPA, in partnership with the NHTSA, will further explore the appropriate degree and form of changes to the program through a notice and comment rulemaking process.

Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles. In 2011, the USEPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018 (76 FR 57106–57513). The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the USEPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6 percent to 23 percent over the 2010 baselines (USEPA and NHTSA 2011). In August 2016, the USEPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans and all types of sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (USEPA and NHTSA 2016).

Fuel Efficiency Standards for Construction Equipment. The federal government sets fuel efficiency standards for non-road diesel engines that are used in construction equipment. The regulations, contained in 40 CRF Parts 1039, 1065, and 1068, include multiple tiers of emission standards. Most recently, the USEPA adopted a comprehensive national program to reduce emissions from non-road diesel engines by integrating engine and fuel controls as a system to gain the greatest reductions. To meet these Tier 4 emission standards, engine manufacturers will produce new engines with advanced control technologies (USEPA 2004).

State

California has promulgated a series of executive orders, laws, and regulations aimed at reducing both the level of GHGs in the atmosphere and emissions of GHGs from commercial and private activities within the State.

California Air Resources Board

CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets the California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the

development of California's State Implementation Plan, for which it works closely with the federal government and the local air districts. The State Implementation Plan is required for the state to take over implementation of the CAA.

In 2004, CARB adopted an Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter (DPM) and other toxic air contaminants (TACs) (Title 13 California Code of Regulations [CCR], Section 2485.). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure generally does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location with certain exemptions for equipment in which idling is a necessary function such as concrete trucks. While this measure primarily targets diesel particulate matter emissions, it has co-benefits of minimizing GHG emissions from unnecessary truck idling.

In 2008, CARB approved the Truck and Bus regulation to reduce particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen oxide (NOx) emissions from existing diesel vehicles operating in California (13 CCR, Section 2025, subsection (h))· The requirements were amended in December 2010 and apply to nearly all diesel fueled trucks and buses with a gross vehicle weight rating greater than 14,000 pounds. For the largest trucks in the fleet (i.e., those with a gross vehicle weight rating greater than 26,000 pounds), there are two methods to comply with the requirements. The first method is for the fleet owner to retrofit or replace engines, starting with the oldest engine model year, to meet 2010 engine standards, or better. This is phased over 8 years, starting in 2015 and would be fully implemented by 2023, meaning that all trucks operating in the state subject to this option would meet or exceed the 2010 engine emission standards for NOx and PM by 2023. The second option, if chosen, requires fleet owners, starting in 2012, to retrofit a portion of their fleet with diesel particulate filters achieving at least 85 percent removal efficiency, so that by January 1, 2016, their entire fleet is equipped with diesel particulate filters. However, diesel particulate filters do not typically lower NOx emissions. Thus, fleet owners choosing the second method must still comply with the 2010 engine emission standards for their trucks and buses by 2020.

In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower (hp) such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation, adopted by the CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. Implementation is staggered based on fleet size (which is the total of all off-road horsepower under common ownership or control), with the largest fleets to begin compliance starting January 1, 2014. Each fleet must demonstrate compliance through one of two methods. The first method is to calculate and maintain fleet average emissions targets, which encourages the retirement or repowering of older equipment and rewards the introduction of newer cleaner units into the fleet. The second method is to meet the Best Available Control Technology (BACT) requirements by turning over or installing Verified Diesel Emission Control Strategies (VDECS) on a certain percentage of its total fleet horsepower. The compliance schedule requires that BACT turn overs or retrofits (VDECS installation) be fully implemented by 2023 in all

equipment in large and medium fleets and across 100 percent of small fleets by 2028. While these regulations primarily target reductions in criteria air pollutant emission, they have co-benefits of minimizing GHG emissions due to improved engine efficiencies.

Senate Bills and Executive Orders

Assembly Bill 1493. Assembly Bill (AB) 1493 (also known as the Pavley Bill) requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHG emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet AB 1493 requirements, CARB approved amendments to the California Code of Regulations (CCR) in 2004 by adding GHG emissions standards to California's existing standards for motor vehicle emissions. When fully phased in, the near-term standards would reduce GHG emissions by approximately 22 percent, compared to the 2002 fleet emissions, while the mid-term standards would reduce emissions by approximately 30 percent.

Assembly Bill 32 (California Global Warming Solutions Act of 2006). The State passed the California Global Warming Solutions Act of 2006 (AB 32; *California Health and Safety Code* Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires reporting of GHG emissions by major sources under the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (MRR) (17 CCR 95100-95160). The MRR is applicable to electricity generators, industrial facilities, fuel suppliers, and electricity importers who generate 10,000 MT or 25,000 MT of CO_2e per year, depending on the type of facility and type of emissions. AB 32 requires a reduction in statewide GHG emissions to 1990 levels by 2020. A summary of the GHG emissions reductions required under HSC Division 25.5 is provided in **Table 3.8-1**, *Estimated Greenhouse Gas Emissions Reductions Required by HSC Division 25.5*.

TABLE 3.8-1
ESTIMATED GREENHOUSE GAS EMISSIONS REDUCTIONS REQUIRED BY HSC DIVISION 25.5

Emissions Category	GHG Emissions (MMT CO_2e)
2008 Scoping Plan (IPCC SAR)	
2020 NAT Forecast (CARB 2008 Scoping Plan Estimate)	596
2020 Emissions Target Set by HSC Division 25.5 (i.e., 1990 Level)	427
Reduction below NAT Necessary to Achieve 1990 Levels by 2020	169 (28.4%) [a]
2014 First Update to Scoping Plan (GHG Estimates Updated in 2014 to Reflect IPCC AR4 GWPs)	
2020 NAT Forecast (CARB 2011 Scoping Plan Estimate)	509.4
2020 Emissions Target Set by HSC Division 25.5 (i.e., 1990 Level)	431
Reduction below NAT Necessary to Achieve 1990 Levels by 2020	78.4 (15.4%) [b]

Emissions Category	GHG Emissions (MMT CO_2e)
2017 Scoping Plan	
2030 NAT Forecast ("Reference Scenario" which includes 2020 GHG reduction policies and programs)	389
2030 Emissions Target Set by HSC Division 25.5 (i.e., 40% below 1990 Level)	260
Reduction below NAT Necessary to Achieve 40% below 1990 Level by 2030	129 (33.2%) [c]

[a] 596 – 427 = 169 / 596 = 28.4%
[b] 509.4 – 431 = 78.4 / 509.4 = 15.4%
[c] 389 – 260 = 129 / 389 = 33.2%

SOURCES: California Air Resources Board, Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (FED), Attachment D, August 19, 2011; California Air Resources Board, 2020 No-Action-Taken (NAT) Emissions Projection, 2014 Edition. Available: http://www.arb.ca.gov/cc/inventory/data/bau.htm. Accessed December 2017; California Air Resources Board, California's 2017 Climate Change Scoping Plan, (November 2017). Available: https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed January 2018.

Senate Bill 1368. Senate Bill (SB) 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed into law in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007. SB 1368 also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas fired plant.

Senate Bill 97. SB 97, signed in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code Sections 21083.05 and 21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions (or the effects of GHG emissions), as required by CEQA.

OPR published a technical advisory recommending that CEQA lead agencies make a good-faith effort to estimate project-related GHG emissions. Specifically, based on available information, CEQA lead agencies should estimate the emissions associated with project-related vehicular traffic, energy consumption, water usage, and construction activities to determine whether project-level or cumulative impacts could occur, and should mitigate the impacts where feasible. OPR requested CARB technical staff to recommend a method for setting CEQA thresholds of significance, as described in CEQA Guidelines Section 15064.7 that would encourage consistency and uniformity in CEQA GHG emissions analyses throughout the State.

The Natural Resources Agency adopted the CEQA Guidelines Amendments prepared by OPR, as directed by SB 97. On February 16, 2010, the Office of Administrative Law approved the CEQA Guidelines Amendments and filed them with the Secretary of State for inclusion in the CCR. The CEQA Guidelines Amendments became effective on March 18, 2010.

Senate Bill 375. SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that would prescribe land use allocation in that MPOs regional transportation plan. CARB, in consultation with MPOs, will provide each affected region with reduction targets for passenger car and light truck regional emissions for 2020 and 2035. Reduction targets are updated every 8 years; but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects may be ineligible for funding programmed after January 1, 2012. Kern Council of Governments (KCOG) is the MPO for the region in which the project is located. In addition, on August 16, 2018, KCOG adopted their 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which is an update to the previous 2014 RTP. The RTP/SCS seeks to: improve economic vitality, improve air quality, improve the health of communities, improve transportation and public safety, promote the conservation of natural resources and undeveloped land, increase regional access to community services, increase regional and local energy independence and increase opportunities to help shape our community's future, while successfully achieving the GHG-emission-reduction targets set by CARB.

Senate Bill 32. Signed into law on September 8, 2016, SB 32 (Amendments to California Global Warming Solutions Act of 2006: Emission Limit) codifies the 2030 target in the recent EO B-30-15 (40 percent below 1990 levels by 2030). The 2030 target is intended to ensure that California remains on track to achieve the goal set forth by EO B-30-15 to reduce Statewide GHG emissions by 2050 to 80 percent below 1990 levels. SB 32 states the intent of the Legislature to continue to reduce GHG for the protection of all areas of the state and especially the state's most disadvantaged communities which are disproportionately impacted by the deleterious effects of climate change on public health (California Legislative Information 2016). SB 32 was passed with companion legislation AB 197, which provides additional direction for developing the Scoping Plan.

Senate Bills 1078 and 107. SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

Senate Bill 350. Known as the Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 will: (1) increase the standards of the California Renewable Portfolio Standard (RPS) program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) require the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provide for the evolution of the Independent System Operator into a regional organization; and (4) require the state to reimburse local agencies and school

districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the Legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation (California Legislative Information 2017).

Executive Order S-14-08. EO S-14-08 expands the State's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, EO S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring that 33 percent of electricity sold in the state come from renewable energy by 2020. CARB adopted the "Renewable Electricity Standard" on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

Executive Order S-21-09. EO S-21-09 directs CARB to adopt regulations to increase California's RPS to 33 percent by 2020. The target was signed into law as SB 2 by Governor Brown in April 2011. This builds upon SB 1078 (2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010.

Executive Order S-3-05. EO S-3-05 set forth the following targets for progressively reducing statewide GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The executive order directed the Secretary of CalEPA to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary is also mandating that biannual reports be submitted to the California Governor and Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various state agencies and commissions.

Executive Order S-20-06. On October 17, 2006, Governor Arnold Schwarzenegger signed EO S-20-06, which calls for continued efforts and coordination among state agencies to implement GHG emission reduction policies, AB 32, and the Health and Safety Code (Division 25.5) through a market-based compliance program. In addition, EO S-20-06 requires the development of GHG reporting and reduction protocols and a multistate registry through joint efforts among CARB, CalEPA, and the California Climate Action Registry (CCAR). EO S-20-06 directs the Secretary for Environmental Protection to coordinate with the CAT to plan incentives for market-based mechanisms that have the potential of reducing GHG emissions.

Executive Order S-1-07. EO S-1-07 proclaims that the transportation sector is California's main source of GHG emissions, generating more than 40 percent of statewide emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in California by at least ten percent

by 2020. This order also directs the CARB to determine whether this Low Carbon Fuel Standard (LCFS) can be adopted as a discrete early-action measure, as part of the effort to meet AB 32 mandates.

Executive Order S-13-08. EO S-13-08 seeks to enhance the State's management of climate impacts including sea level rise, increased temperatures, shifting precipitation, and extreme weather events by facilitating the development of the State's first climate adaptation strategy. This would provide consistent guidance from experts on how to address climate change impacts in the state.

Executive Order B-16-2012. In March 23, 2012, Governor Brown issued EO B-16-2012 to encourage zero emission vehicles (ZEVs) and related infrastructure. It orders CARB, CEC, California Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks concerning ZEVs. By 2020, the state's ZEV infrastructure should support up to one million vehicles. By 2025, EO B-16-2012 aims to put over 1.5 million ZEVs on California roads and displace at least 1.5 billion gallons of petroleum. The EO also directs state government to begin purchasing ZEVs. In 2015, 10 percent of state departments' light-duty fleet purchases must be ZEVs, climbing to 25 percent of light duty purchases by 2020. EO B-16-2012 sets a target for 2050 to reduce GHG emissions in the transportation sector by 80 percent below 1990 levels (Office of Governor Edmund G. Brown Jr. 2012).

Executive Order B-30-15. EO B-30-15 added the interim target to reduce statewide GHG emissions 40 percent below 1990 levels by 2030 and requires CARB to update its current AB 32 Scoping Plan to identify measures to meet the 2030 target.

CARB Scoping Plan

On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap to achieve the California GHG reductions required by AB 32 through subsequently enacted regulations. CARB's Scoping Plan contains the main strategies California would implement to reduce the projected 2020 Business as Usual (BAU) emissions to 1990 levels, as required by AB 32. These strategies are intended to reduce CO_2e[1] emissions by 174 million metric tons (MT), or approximately 30 percent, from the State's projected 2020 emissions level of 596 million MT CO_2e under a BAU[2] scenario. This reduction of 42 million MT CO_2e, or almost ten percent from 2002 to 2004 average emissions, would be required despite the population and economic growth forecasted through 2020.

CARB's Scoping Plan calculates 2020 BAU emissions as those expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic

[1] Carbon Dioxide Equivalent (CO_2e) - A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

[2] "Business as Usual" refers to emissions expected to occur in the absence of any GHG reduction measure (California Environmental Protection Agency Air Resources Board Website, http://www.arb.ca.gov/cc/inventory/data/bau.htm, Accessed June 1, 2016). Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition."

sectors (e.g., transportation, electrical power, commercial and residential, industrial, etc.). CARB used 3-year average emissions, by sector, for 2002 to 2004 to forecast emissions to 2020. When CARB's Scoping Plan process was initiated, 2004 was the most recent year for which actual data was available. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32.

First Update to the Climate Change Scoping Plan (May 2014)

This First Update to California's Climate Change Scoping Plan (2014 Scoping Plan Update) was developed by the CARB in collaboration with the CAT and reflects the input and expertise of a range of state and local government agencies. The Update reflects public input and recommendations from business, environmental, environmental justice, utilities and community-based organizations provided in response to the release of prior drafts of the Update, a Discussion Draft in October 2013, and a draft Proposed Update in February 2014.

This report highlights California's success to date in reducing its GHG emissions and lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The First Update includes recommendations for establishing a mid-term emissions limit that aligns with the State's long-term goal of an emissions limit 80 percent below 1990 levels by 2050 and sector-specific discussions covering issues, technologies, needs, and ongoing State activities to significantly reduce emissions throughout California's economy through 2050. The focus areas include energy, transportation, agriculture, water, waste management, and natural and working lands (CARB 2014). With respect to the transportation sector, California has outlined several steps in the State's zero emission vehicle (ZEV) Action Plan to further support the market and accelerate its growth. Committed implementation of the actions described in the plan will help meet Governor Brown's 2012 EO B-16-2012, which—in addition to establishing a more specific 2050 GHG target for the transportation sector of 80 percent from 1990 levels—called for 1.5 million ZEVs on California's roadways by 2025.

Achieving such an aggressive 2050 target will require innovation and unprecedented advancements in energy demand and supply.[3] Emissions from 2020 to 2050 will have to decline at more than twice the rate of that which is needed to reach the 2020 statewide emissions limit. In addition to our climate objectives, California also must meet federal clean air standards. Emissions of criteria air pollutants, including ozone precursors (primarily oxides of nitrogen, or NOx) and particulate matter, must be reduced by an estimated 90 percent by 2032 to comply with federal air quality standards. The scope and scale of emission reductions necessary to improve air quality is similar to that needed to meet long-term climate targets. Achieving both objectives will align programs and investments to leverage limited resources for maximum benefit.

Second Update to the Climate Change Scoping Plan (November 2017)

On December 14, 2017, CARB approved the final version of *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan Update), which outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels

[3] Ibid.

(CARB 2017). The 2017 Scoping Plan Update identifies key sectors of the implementation strategy, which includes improvements in low carbon energy, industry, transportation sustainability, natural and working lands, waste management, and water. Through a combination of data synthesis and modeling, CARB determined that the target Statewide 2030 emissions limit is 260 million metric tons (MMT) of CO_2e, and that further commitments will need to be made to achieve an additional reduction of 50 MMT CO_2e beyond current policies and programs. The cornerstone of the 2017 Scoping Plan Update is an expansion of the Cap-and-Trade program to meet the aggressive 2030 GHG emissions goal and ensure achievement of the 2050 limit set forth by EO B-30-15.

With respect to project-level GHG reduction actions and thresholds for individual development projects, the 2017 Scoping Plan Update indicates:

> *Beyond plan-level goals and actions, local governments can also support climate action when considering discretionary approvals and entitlements of individual projects through CEQA. Absent conformity with an adequate geographically-specific GHG reduction plan as described in the preceding section above, CARB recommends that projects incorporate design features and GHG reduction measures, to the degree feasible, to minimize GHG emissions. Achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development.*[4]

Renewable Energy: California Renewables Portfolio Standard Program

Established in 2002 under SB 1078, accelerated in 2006 under SB 107, expanded in 2011 under SB X1-2, and again in 2015 under SB 350, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 50 percent of total procurement by December 31, 2030.[5] The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027.

California Green Buildings Standard Code

The California Energy Commission first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every 3 years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The 2016 update to the Energy Efficiency Standards for Residential and Nonresidential Buildings focuses on several key areas to improve the energy efficiency of renovations and addition to existing buildings as well as newly constructed buildings and renovations and additions to existing buildings. The major efficiency improvements to the residential Standards involve improvements for attics, walls, water heating, and lighting, whereas the major efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning

4 *Id.* at 101.

5 As of 2015, California's top three POUs were on track or ahead of their respective RPS targets, with PG&E, SCE and SDG&E reporting RPS procurements for 2020 at 29.5%, 24.5% and 35.2%, respectively (www.cpuc.ca.gov/rps_homepage/, accessed November 8, 2017).

Engineers (ASHRAE) 90.1-2013 national standards. Furthermore, the 2016 update requires that enforcement agencies determine compliance with CCR, Title 24, Part 6 before issuing building permits for any construction (CEC, 2015).

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality." (CBSC, 2010) As of January 1, 2011, the CALGreen Code is mandatory for all new buildings constructed in the state. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code was most recently updated in 2016 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2017 (CBSC, 2016).

The state has adopted regulations to increase the proportion of electricity from renewable sources. In November 2008, Governor Schwarzenegger signed EO S-14-08 (CCS, 2008), which expands the state's Renewables Portfolio Standard to 33 percent renewable power by 2020. On April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's Renewables Portfolio Standard to 33 percent by 2020. SB 350 (Chapter 547, Statues of 2015) further increased the Renewables Portfolio Standard to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027.

Cap-and-Trade Program

The Climate Change Scoping Plan identifies a Cap-and-Trade Program as a key strategy CARB will employ to help California meet its GHG reduction targets for 2020 and 2030, and ultimately achieve an 80 percent reduction from 1990 levels by 2050. Pursuant to its authority under HSC Division 25.5, CARB designed and adopted a California Cap-and-Trade Program to reduce GHG emissions from major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve the state's emission-reduction mandate of returning to 1990 levels of emissions by 2020 and 40 percent below 1990 levels by 2030 (17 CCR Sections 95800–96023). Under Cap-and-Trade program, an overall limit is established for GHG emissions from capped sectors (e.g., electricity generation, petroleum refining, cement production, and large industrial facilities that emit more than 25,000 MT CO_2e per year) and declines over time, and facilities subject to the cap can trade permits to emit GHGs. The statewide cap for GHG emissions from the capped sectors commenced in 2013 and declines over time, achieving GHG emission reductions throughout the Program's duration (17 CCR Sections 95811, 95812). On July 17, 2017, the California legislature passed AB 398, extending the Cap-and-Trade program through 2030.

The Cap-and-Trade Regulation provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade Program is that it does not

guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis.

If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. In other words, the Cap-and-Trade Program functions similarly to an insurance policy for meeting California's GHG emissions reduction mandates.

Regional and Local

Kern Council of Governments

The Kern Council of Governments recently adopted the 2018 RTP/SCS on August 16, 2018. KCOG is the Regional Transportation Planning Agency (RTPA) for the Kern County region. The 2018 RTP/SCS is a planning document prepared in cooperation with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), the California Department of Transportation (Caltrans), and other stakeholders, including transportation system users. SB 375 includes the following four primary findings related to the RTP/SCS development process:

- That CARB develop regional GHG emission reduction targets for cars and light trucks for each of the 18 MPOs in California, including KCOG. The target for Kern County is a per capita reduction in GHG emissions from passenger vehicle travel of 5 percent by 2020 and 10 percent by 2035 relative to 2005 levels.
- Kern COG was required to prepare an SCS that specifies how the GHG emission reduction target set by CARB will be achieved. If the target cannot be met through the SCS, then an APS shall be prepared by KCOG. Chapter 4 of the 2018 RTP/SCS includes the SCS for KCOG. The RTP/SCS for Kern demonstrated reductions of 14.1 percent for 2020 and 16.6 percent for 2035, exceeding targets established by CARB.
- Streamlines CEQA requirements for specific residential and mixed-use developments that are consistent with the Kern COG SCS or APS (as determined by CARB) to achieve regional GHG emissions reduction target.

Eastern Kern Air Pollution Control District

The Eastern Kern Air Pollution Control District (EKAPCD) in 2012 adopted an addendum to its CEQA Guidelines to address GHG impacts, including quantitative thresholds for determining significance of GHG emissions for projects where EKAPCD is the CEQA lead agency. A project is considered to have a significant project or cumulatively considerable impact if it exceeds the following criteria:

- Generate 25,000 MT or more of CO_2e per year

The above impact would be considered to be fully reduced to below the significance level if it meets one of the following conditions:

- The project demonstrates to EKAPCD that it is in compliance with a state GHG reduction plan such as AB 32 or future federal GHG reduction plan if it is more stringent than the state plan.
- Project GHG emissions can be reduced by at least 20 percent below BAU through implementation of one or more of the following strategies:
    a. Compliance with a Best Performance Standard (BPS)
    b. Compliance with GHG Offset
    c. Compliance with an Alternative GHG Reduction Strategy

Kern County General Plan

The Kern County General Plan (Kern County, 2009), originally adopted on June 15, 2004, and last amended on September 22, 2009, contains the following policies that would indirectly impact GHG emissions (i.e., through the reduction of fossil fuel use). The policies and implementation measures in the Kern County General Plan for greenhouse gas emissions that are applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

<u>Policies</u>

Policy 18: The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.

Policy 19: In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decision making body, as part of its deliberations, will ensure that:

(a) All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and

(b) The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the California Environmental Quality Act.

<u>Implementation Measures</u>

Measure F: All discretionary permits shall be referred to the appropriate air district for review and comment.

Measure G: Discretionary development projects involving the use of tractor-trailer rigs shall incorporate diesel exhaust reduction strategies including, but not limited to:

a. Minimizing idling time.

b. Electrical overnight plug-ins.

Measure H: Discretionary projects may use one or more of the following to reduce air quality effects:

a. Pave dirt roads within the development.

b. Pave outside storage areas.

c. Provide additional low Volatile Organic Compounds (VOC) producing trees on landscape plans.

d. Use of alternative fuel fleet vehicles or hybrid vehicles.

e. Use of emission control devices on diesel equipment.

f. Develop residential neighborhoods without fireplaces or with the use of Environmental Protection Agency certified, low emission natural gas fireplaces.

g. Provide bicycle lockers and shower facilities on site.

h. Increasing the amount of landscaping beyond what is required in the Zoning Ordinance (Chapter 19.86).

i. The use and development of park and ride facilities in outlying areas.

j. Other strategies that may be recommended by the local Air Pollution Control Districts.

Kern County General Plan Chapter 5: Energy Element – Solar Energy Development

Goal

Goal 1: Encourage safe and orderly commercial solar development.

Policies

Policy 1: The County shall encourage domestic and commercial solar energy uses to conserve fossil fuels and improve air quality.

Policy 3: The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

3.8.1.3 Environmental Setting

This section of the EIS/EIR describes the existing physical environmental conditions in the vicinity of the project as they relate to the potential greenhouse gas impacts of the proposed project and alternatives.

Global climate change refers to changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation and storms. Historical records indicate that global climate changes have occurred in the past due to natural phenomena; however, current data increasingly indicate that the current global conditions differ from past climate changes in rate and magnitude. Global climate change attributable to anthropogenic (human) GHG emissions is currently one of the most important and widely debated scientific, economic and

political issues in the United States and the world. The extent to which increased concentrations of GHGs have caused or will cause climate change and the appropriate actions to limit and/or respond to climate change are the subject of significant and rapidly evolving regulatory efforts at the federal and state levels of government.

CARB and USEPA regulate GHG emissions within the State of California and the United States, respectively. While CARB has the primary regulatory responsibility within California for GHG emissions, local agencies can also adopt policies for GHG emission reduction. CARB has divided California into regional air basins. The Proposed Action is located in Kern County, which is within the Mojave Desert Air Basin (MDAB), and under the jurisdiction of EKAPCD.

Greenhouse Gases

GHGs are compounds in the Earth's atmosphere which play a critical role in determining temperature near the Earth's surface. More specifically, these gases allow high-frequency shortwave solar radiation to enter the Earth's atmosphere, but retain some of the low frequency infrared energy which is radiated back from the Earth towards space, resulting in a warming of the atmosphere. Not all GHGs possess the same ability to induce climate change; as a result, GHG contributions are commonly quantified in the units of CO_2e. Mass emissions are calculated by converting pollutant specific emissions to CO_2e emissions by applying the proper global warming potential (GWP) value.[6] GWP is the measure of the amount of energy one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period (USEPA, 2017a). These GWP ratios are provided by the Intergovernmental Panel on Climate Change (IPCC) in AR4 (IPCC, 2007) and can be found in 40 CRF 98 Table 1A[7]. By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year period is used as a reference point for GHG emissions. The CO_2e values are calculated for construction years as well as project build-out conditions in order to generate GHG emissions for construction and operation. Compounds that are regulated as GHGs are discussed below (USEPA, 2017b).

- **Carbon Dioxide:** CO_2 is the most abundant anthropogenic GHG in the atmosphere and is primarily generated from fossil fuel combustion from stationary and mobile sources. CO_2 is also generated from solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO_2 is also removed from the atmosphere (or sequestered) when it is absorbed by plants as part of the biological carbon cycle. CO_2 is the reference gas (GWP of 1) for determining the GWPs of other GHGs.
- **Methane:** CH_4 is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, anaerobic decomposition of organic

6 GWPs and associated CO_2e values were developed by the Intergovernmental Panel on Climate Change (IPCC), and published in its Second Assessment Report (SAR) in, 1996. Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's SAR. The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The California Air Resources Board (CARB) has begun reporting GHG emission inventories for California using the GWP values from the IPCC AR4.

7 40 CRF 98 Table 1A. Available at: https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol22/pdf/CFR-2012-title40-vol22-part98-subpartA-appA.pdf. Accessed August 2018.

matter in landfills, manure management, and leaks in natural gas pipelines. The GWP of CH_4 is 25.

- **Nitrous Oxide:** N_2O produced by human-related sources including agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of N_2O is 298.
- **Hydrofluorocarbons:** HFCs are fluorinated compounds consisting of hydrogen, carbon, and fluorine. They are typically used as refrigerants in both stationary refrigeration and mobile air conditioning systems. The GWPs of HFCs ranges from 124 for HFC-152a to 14,800 for HFC-23.
- **Perfluorocarbons:** PFCs are fluorinated compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. The GWPs of PFCs range from 7,390 to 17,700.
- **Sulfur Hexafluoride:** SF_6 is a fluorinated compound consisting of sulfur and fluoride. It is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. SF_6 has a GWP of 22,800.

In most cases, GHGs have both natural and anthropogenic (human-caused) sources. Natural mechanisms already exist as part of the "carbon cycle" for removing GHGs from the atmosphere (often called land or ocean sinks). Human activities associated with the Industrial Revolution beginning in the late 18th century have also changed the composition of the atmosphere. The burning of fossil fuels, such as coal and oil, and deforestation has caused the concentrations of heat-trapping GHGs to increase significantly in our atmosphere. Because of the increase in anthropogenic sources, levels of GHGs have exceeded the normal rates of natural absorption. This has resulted in increased atmospheric concentrations of GHGs and potentially human-induced climate change.

GHG emissions in the United States come mostly from energy use. Energy-related CO_2 emissions resulting from fossil fuel exploration and use account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO_2 emissions from burning fossil fuels. More than half the energy-related emissions come from large stationary sources, such as power plants. As previously stated, the generation of electricity can produce GHGs with criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. For fossil fuel–fired power plants, the GHG emissions include primarily CO_2, with much smaller amounts of N_2O, and CH_4 (often from unburned natural gas). For solar power energy generation projects, stationary-source GHG emissions are much smaller than fossil fuel–fired power plants, but the associated maintenance vehicle emissions are higher due to the different and far-afield maintenance requirements that necessitate more vehicles and more travel within the project site. Other sources of GHG emissions include SF_6 from high-voltage equipment and HFCs and PFCs from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels; other sources of GHG emissions are small and are more likely to be easily controlled or reused/recycled.

Greenhouse Gas Emissions Inventories

Worldwide man-made emissions of GHGs were approximately 49,000 MMT CO_2e annually including ongoing emissions from industrial and agricultural sources and emissions from land use changes (e.g., deforestation) (IPCC, 2014). Emissions of CO_2 from fossil fuel use and industrial processes account for 65 percent of the total while CO_2 emissions from all sources accounts for 76 percent of the total. Methane emissions account for 16 percent and N_2O emissions for 6.2 percent. Global CO_2 emissions are expected to increase by 1.9 percent annually between 2001 and 2025. Much of the increase in these emissions is expected to occur in the developing world where emerging economies are fueled with fossil energy, such as China and India. Around 2018, developing countries' emissions are expected to surpass the emissions of industrialized countries, increasing by 2.7 percent annually between 2001 and 2025 (faster than the world average).

The United States is the second largest emitter of GHGs of any nation on earth (USEPA, 2017). California CO_2 emissions are much less than the national average, both in per capita emissions (49th out of 51) and per gross state product (47th out of 51) in the US (U.S. Energy Information Administration, 2017). Based on data from the USEPA (USEPA, 2017), the total GHG emissions in the United States were 6,586.7 MMT CO_2e in 2015, a 3.5 percent increase from 1990 levels. Emissions decreased from 2014 to 2015 by 2.3 percent. The decrease in total greenhouse gas emissions between 2014 and 2015 was driven in large part by a decrease in CO_2 emissions from fossil fuel combustion. The decrease in CO_2 emissions from fossil fuel combustion was a result of multiple factors, including: (1) substitution from coal to natural gas consumption in the electric power sector; (2) warmer winter conditions in 2015 resulting in a decreased demand for heating fuel in the residential and commercial sectors; and (3) a slight decrease in electricity demand. Relative to 1990, the baseline for this Inventory, gross emissions in 2015 are higher by 3.5 percent, down from a high of 15.5 percent above 1990 levels in 2007. In 2015, the electrical, transportation, industrial end-use sectors accounted for 77 percent of the total US emissions. With electrical, transportation, and industrial sources emitting 29 percent, 27 percent and 21 percent of CO_2 emissions, respectively. The commercial and residential end-use sectors accounted for 7 and 6 percent, respectively, agriculture accounted for 9 percent, and the U.S. Territories accounted for 1 percent of CO_2 emissions (USEPA, 2017b).

CARB compiles GHG inventories for the state of California. Based on the 2016 GHG inventory data (i.e., the latest year for which data are available) prepared by CARB in 2018, California emitted 429.4 MMT CO_2e including emissions resulting from imported electrical power (CARB, 2018). Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2016, accounting for 40 percent of the total GHG emissions in the state. This sector was followed by the industrial sector at 23 percent and the electric power sector (including both in-state and out of state sources) at 16 percent (CARB, 2018b). CARB has projected that, unregulated statewide GHG emissions for the year 2020 will be 431 MMT CO_2e (CARB, 2014). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions. **Table 3.8-2**, *State of California Greenhouse Gas Emissions,* identifies and quantifies statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2016. As shown in the table, the transportation sector is the largest contributor to statewide GHG emissions at approximately 40 percent in 2016.

TABLE 3.8-2
STATE OF CALIFORNIA GREENHOUSE GAS EMISSIONS

Category	Total 1990 Emissions using IPCC SAR (MMT CO_2e)	Percent of Total 1990 Emissions	Total 2016 Emissions using IPCC AR4 (MMT CO_2e)	Percent of Total 2016 Emissions
Transportation	150.7	35%	169.4	40%
Electric Power	110.6	26%	68.6	16%
Commercial	14.4	3%	12.9	3%
Residential	29.7	7%	24.2	6%
Industrial	103.0	24%	89.61	21%
Recycling and Waste [a]	–	–	8.8	2%
High GWP/Non-Specified [b]	1.3	<1%	19.8	5%
Agriculture/Forestry	23.6	6%	33.8	8%
Forestry Sinks	-6.7		-- [c]	--
Net Total (IPCC SAR)	**426.6**	**100%**	--	--
Net Total (IPCC AR4) [d]	**431**	**100%**	**429.4**	**100%**

[a] Included in other categories for the 1990 emissions inventory.
[b] High GWP gases include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). High GWP gases are not specifically called out in the 1990 emissions inventory.
[c] Revised methodology under development (not reported for 2012).
[d] CARB revised the State's 1990 level GHG emissions using GWPs from the IPCC AR4.

SOURCES: California Air Resources Board, Staff Report – California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit, (2007); California Air Resources Board, "California Greenhouse Gas 2000-2016 Inventory by Scoping Plan Category – Summary," (2018https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf. Accessed October 2018.

Between 1990 and 2016, the population of California grew by approximately 9.5 million (from 29.8 to 39.3 million) (U.S. Census Bureau, 2017). This represents an increase of approximately 32 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $2.62 trillion in 2016 representing an increase of approximately 239 percent (just over three times the 1990 gross state product) (California Department of Finance, 2017). Despite the population and economic growth, California's net GHG emissions only declined by approximately 0.4 percent. According to CARB, the declining trend coupled with the state's GHG reduction programs (such as the Renewables Portfolio Standard, Low Carbon Fuel Standard, vehicle efficiency standards, and declining caps under the Cap and Trade Program) demonstrate that California is on track to meet the 2020 GHG reduction target codified in California Health and Safety Code (HSC), Division 25.5, also known as The Global Warming Solutions Act of 2006 (AB 32) (CARB, 2016). California GHG emissions and the change in emissions of CO_2, CH_4, and N_2O from 2013 to 2015 are summarized below in **Table 3.8-3**, *California Greenhouse Gas Emissions of CO_2, CH_4, and N_2O*.[8]

[8] The most recent annual GHG emission inventory released by CARB is for year 2015, which was released in June 2017.

TABLE 3.8-3
CALIFORNIA GREENHOUSE GAS EMISSIONS OF CO_2, CH_4, AND N_2O

	Gross GHG Emissions CO_2e (million metric tons)		
Sector	**2014**	**2015**	**2016**
Carbon Dioxide (CO_2)	372.7	369.9	357.3
Methane (CH_4)	39.6	39.0	38.9
Nitrous Oxide (N_2O)	14.1	13.6	13.4
High Global Warming Potential Gases (HFC, PFC, SF_6)	17.7	19	19.8
Total GHG Emissions	**444.1**	**441.4**	**429.4**

SOURCE: CARB, 2018a. Available at: https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_bygas.pdf. Accessed October 2018.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) prepared a community-wide GHG inventory for all of Kern County in 2012 (Kern County, 2012). The year 2005 was used as the base year and county-wide GHG emissions were estimated to be 27 MMT CO2e. The Fossil Fuel Industry sector represented 40 percent of the 2005 total, followed by the Electricity Consumption sector at 22 percent. GHG emissions from electricity generation in Kern County were included in the County-wide GHG emissions, but not added in the totals. The County's 2005 GHG emissions, not including subtraction of sequestration sectors, are shown in **Table 3.8-4,** *Kern County 2005 GHG Emissions Inventory*.

TABLE 3.8-4
KERN COUNTY 2005 GHG EMISSIONS INVENTORY

Category	GHG Emissions (MMT CO_2e/year)	Percent of Total
Electricity Production	13,002,127	*
Electricity Consumption	6,039,114	22%
Residential/Commercial/Industrial Combustions	1,281,498	5%
Transportation	4,569,913	17%
Fossil Fuels Industry	10,928,153	40%
Industrial Processes	1,852,124	7%
Waste Management	120,494	<1%
Agriculture Fugitives	2,024,470	7%
Forestry and Land Use	11,028	<1%
Other Sources	218,823	1%
Total GHG Emissions and Percent	**27,045,617**	**100%**

* The Kern County GHG emissions inventory included emissions from electricity production for completeness purposes, but the sector was not included in the county wide description of emissions and therefore not included in the county-wide percentage of emissions.

SOURCE Kern County, 2012.

The County also forecasted what their 2020 GHG emissions would be, not including subtraction of sequestration sectors. These forecasted emissions are shown in **Table 3.8-5,** *Kern County 2020 Forecasted GHG Emissions Inventory*.

TABLE 3.8-5
KERN COUNTY 2020 FORECASTED GHG EMISSIONS INVENTORY

Category	GHG Emissions (MMT CO_2e/year)	Percent of Total
Electricity Production	18,455,958	*
Electricity Consumption	8,572,261	31%
Residential/Commercial/Industrial Combustions	1,689,414	6%
Transportation	4,823,756	18%
Fossil Fuels Industry	7,002,009	26%
Industrial Processes	2,348,754	9%
Waste Management	146,788	1%
Agriculture Fugitives	2,652,616	10%
Forestry and Land Use	14,669	<1%
Other Sources	22,442	<1%
Total GHG Emissions and Percent	**27,272,709**	**100%**

* The Kern County GHG emissions inventory included emissions from electricity production for completeness purposes, but the sector was not included in the county wide description of emissions and therefore not included in the county-wide percentage of emissions.

SOURCE Kern County, 2012.

Existing Greenhouse Gas Emissions at the Project Site

As the project site is a vacant lot, there are no industrial, residential, or other emitters of GHGs currently operating at the project site. There are no other existing onsite operations that result in the combustion of fossil fuel, or otherwise result in direct anthropogenic emissions of GHGs onsite. The existing desert ecosystem onsite, made up of plants and soils (including biological soil crusts), provides ongoing natural carbon uptake as an ecosystem service (Wohlfahrt et al., 2008). completed an evaluation of carbon uptake by a natural Mojave Desert ecosystem. Their study indicates that desert ecosystems may result in the uptake of carbon in amounts as high as 102 to 110 grams per square meter per year (g/m^2yr); however, the study showed a high degree of uncertainty around these amounts. Other studies have indicated lower carbon uptake amounts for desert habitats, including between 10 and 30 g/m^2yr, 46 g/m^2yr, 70 g/m^2yr, and 72 g/m^2yr (Schlesinger et al., 2009). Given the high variability of carbon uptake amounts identified in the scientific literature, this analysis assumes that onsite ecosystems could uptake carbon at a rate of 63 g/m^2yr based on the average of the carbon uptake rates discussed above. Under existing conditions, this would equate to a natural carbon uptake, expressed in CO_2, of approximately 0.93 MT of CO_2 per acre per year.

Desert soils also store carbon as inorganic calcium carbonate ($CaCO_3$) in the form of caliche. The quantity, location, and depth of caliche deposits at the project site are not known, and feasible methods for identifying and/or measuring caliche in soils throughout large sites such as the project site have not been developed successfully. Studies suggest that the amount of stored inorganic

carbon in desert soils is dynamic, and that disturbance and resultant fragmentation of caliche deposits may make the CO_2 within $CaCO_3$ subject to loss, which could result in the emission of CO_2 from soils (Allen et al., 2013).

Climate Change

In the early 1960s, scientists recognized that carbon dioxide (CO_2) levels in the atmosphere were rising every year. It was also noted that several other gases, including methane (CH_4) and nitrous oxides (N_2O) were also increasing. Levels of these gases have increased by about 40 percent since large-scale industrialization began around 150 years ago, according to the USEPA. After numerous computer-simulated model runs on the effects of these increases in the atmosphere, it was concluded that the rising concentrations almost always resulted in an increase of average global temperature. Rising temperatures may, in turn, produce changes in weather, sea levels, and land use patterns, commonly referred to as "climate change." There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Human-caused emissions of GHGs, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Increases in global temperatures will cause a reduction in the polar ice caps and an increase in sea level, which will result in flooding in low lying areas of the world. Additionally, climate change will shift rainfall patterns, which will cause significant impacts to agriculture and fresh water availability worldwide.

Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and the use of motor vehicles have elevated the concentration of GHGs in the atmosphere. This accumulation of GHGs has contributed to an increase in the average temperature of the earth's atmosphere and has contributed to global climate change. Of the principal GHGs (i.e., CO_2, CH_4, N_2O, SF_6, PFCs, and HFCs), CO_2 is the most common reference gas for climate change.

As the concentrations of GHGs continue to increase in the atmosphere, the Earth's surface temperature is also increasing, exceeding past levels. The Earth's average surface temperature has increased by about 0.15 degrees Fahrenheit (°F) per decade since 1901. On average, the warmest global temperatures on record have all occurred between 2006 and 2015, with 2015 being the warmest on record (USEPA, 2016a). Climate models predict that the average temperature at the Earth's surface could increase by 0.5 to 8.6°F by the end of this century if atmospheric GHG concentrations continue to increase (USEPA, 2017a).

Climate change affects people, plants, and animals. Scientists are certain that increasing the concentration of GHGs will change the planet's climate; however, they are not sure by how much it will change, at what rate it will change, or what the exact effects will be. They are working to better understand future climate change and how the effects will vary by region and over time.

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects

of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability to accurately model it, the uncertainty surrounding climate change may never be completely eliminated. Nonetheless, the IPCC's *Fifth Assessment Report, Summary for Policy Makers* states that, "it is *extremely likely* that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forc[es [*sic*] together" (IPCC, 2013a). A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity (Anderegg et al., 2010).

According to CARB, the potential impacts in California due to global climate change may include: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; larger forest fires; more drought years; increased erosion of California's coastlines and seawater intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and increased pest infestation (CalEPA, 2006). Below is a summary of some of the potential effects that could be experienced in California as a result of global warming and climate change.

Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2001):

- Higher maximum temperatures and more hot days over nearly all land areas,
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas,
- Reduced diurnal temperature range over most land areas,
- Increase of heat index over land areas, and
- More intense precipitation events.

Also, many secondary effects are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

Some of the potential resulting effects in California of global warming may include loss in snowpack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. A summary of some of these potential effects that could be experienced in California as a result of climate change is provided below.

Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect and, therefore, its indirect effects, are uncertain. If higher temperatures are accompanied by

drier conditions, the potential for large wildfires could increase, which, in turn, would exacerbate air quality. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (CalEPA, 2013). However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires.

In 2009, the California Natural Resources Agency (CNRA) published the *California Climate Adaptation Strategy* as a response to the Governor's EO S-13-2008 (CNRA, 2009). The CNRA report lists specific recommendations for state and local agencies to best adapt to the anticipated risks posed by a changing climate. In accordance with the *California Climate Adaptation Strategy*, the CEC was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers (CNRA, 2009). The website, known as Cal-Adapt, became operational in 2011.[9] The information provided on the Cal-Adapt website represents a projection of potential future climate scenarios. The data are comprised of the average values (i.e., temperature, sea-level rise, snowpack) from a variety of scenarios and models and are meant to illustrate how the climate may change based on a variety of different potential social and economic factors. According to the Cal-Adapt website, the portion of the Kern County in which the project is located could result in an average increase in temperature of approximately 8 to 12 percent (about 5.7 to 6.3°F) by 2070–2099, compared to the 1961–1990 period (Cal-Adapt, 2018).

Water Supply

Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. Studies have found that, "Considerable uncertainty about precise impacts of climate change on California hydrology and water resources will remain until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change" (Pacific Institute, 2003). For example, some studies identify little change in total annual precipitation in projections for California while others show significantly more precipitation (Pacific Institute, 2003). Warmer, wetter, winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full. Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge (CNRA, 2014).

The California Department of Water Resources report on climate change and effects on the State Water Project (SWP), the Central Valley Project, and the Sacramento-San Joaquin Delta, concludes that "climate change will likely have a significant effect on California's future water resources…[and] future water demand." It also reports that "much uncertainty about future water demand [remains], especially [for] those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain." It also reports that the relationship between climate change and its potential effect on water demand is not well understood, but "[i]t is unlikely that this level of uncertainty will diminish significantly in the

[9] The Cal-Adapt website address is: http://cal-adapt.org.

foreseeable future." Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows (California Department of Water Resources, 2006). In its *Fifth Assessment Report*, the IPCC states "Changes in the global water cycle in response to the warming over the 21st century will not be uniform. The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, although there may be regional exceptions" (IPCC, 2013a).

Hydrology and Sea-Level Rise

As discussed above, climate changes could potentially affect: the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes: expansion of seawater as the oceans warm, and melting of ice over land.

Since 1870 the global sea level has risen about 8 inches. The rising sea level increases the likelihood and risk of flooding. Future sea level rise will vary for different reasons but is expected to rise at a greater rate than during the past 50 years. Regional factors, such as land elevation changes that occur due to subsidence or uplifting, will influence the relative sea level rise for the coastlines around the world. However, global sea level rise of 1 to 4 feet could occur by 2100 (USEPA, 2017a). A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion agricultural industry that produces half the country's fruits and vegetables and has the highest crop value in the nation serving as an important source of the nation's food supply. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thus affect their quality (California Climate Change Center, 2006).

Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists expect that the average global surface temperature could rise by 2-11.5°F (1.1-6.4°C) by 2100, with significant regional variation (National Research Council, 2010). Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Sea level could rise as much as 2 feet along most of the United States coastline. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes such as carbon cycling and storage (Parmesan and Galbraith, 2004).

3.8.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences relating to greenhouse gas emissions for the Proposed Action. It describes the methods used to determine the effects of the project and lists the thresholds used to conclude whether an effect would be substantially adverse or significant. Where warranted, measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

3.8.2.1 Assessment Methods/Methodology

The assumptions associated with the emission estimates are detailed in a Memorandum titled Edwards Air Force Base Solar Facility Air Quality and Greenhouse Gas Emissions Methodology and Emissions Calculations (Dudek, 2018), prepared by Dudek, in Appendix B2 of this EIS/EIR. Project-generated GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, the latest model available for both short-term construction and long-term operational GHG emissions. The use of CalEEMod is consistent with Kern County recommendations for project level review since CalEEMod uses current emission factors and default values and has the ability to quantify indirect air quality emissions and air quality mitigation (Kern County, 2006).

Construction Assumptions

Emissions from the construction phase of the project were estimated using CalEEMod. For purposes of estimating project emissions, and based on information provided by the project developer, this analysis assumed an original construction start date of July 2018 with construction ending in 2020, which yields a conservative estimate of emissions, as it assumed that construction activities would occur at the earliest feasible start date and applied the mobile source and fugitive dust emissions factors for that date.[10] Mobile source and fugitive dust emission factors are slightly less each year due to more stringent standards, so an earlier start date would result in higher emissions. Construction of the project has been pushed back and will now commence in July 2020 and would last approximately 24 months, ending in July 2022. Since construction emissions decrease over time, this analysis is still valid and is a conservative estimate of project emissions, as it results in higher emissions than if the analysis were rerun using the new construction start date.

The phasing of construction activities described below represents the highest possible emissions; with all phases of solar facility construction happening directly after one another. The analysis contained herein is based on the following assumptions (duration of phases is approximate):

- Solar Facility Construction July 2020–July 2022 (24 months)

[10] This analysis assumed a construction start date of July 2018, which represents the earliest date construction would be initiated at the time the Project was proposed. The earliest start date for construction of the Project represents the worst-case scenario for air quality and GHG emissions because equipment and vehicle emission factors for later years would be slightly less each year due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles. Thus, although construction will not occur until 2020, the analysis of construction starting in 2018 would be more conservative as this year would yield higher emissions than those in 2020. Therefore, the analysis provided in this Draft EIS/EIR is a conservative analysis and is still valid although the construction start date has been moved out two years.

- Gen-tie Construction October 2020–July 2021 (9 months)

Table 3.8-6, *Construction Equipment*, details the anticipated construction equipment, quantity, and usage for construction of the solar facility and the gen-tie. It also provides estimates for vehicle trips. The analysis assumes that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction. For construction it was assumed there would be an average of 550 peak daily workers for a total of 1,100 one-way trips, 339 daily miscellaneous delivery trips, 504 daily water truck trips (vendor trucks) and 10 daily panel delivery trips (haul trips). No additional haul truck trips for earthwork materials were assumed because earthwork volumes are anticipated to be balanced onsite. Trip lengths for worker, vendor and haul trips were assumed to be 30, 7.3, and 114 miles respectively. Additionally, it was assumed that workers and vendors would travel 0.27 miles on unpaved roads each trip and haul trucks would travel 2.5 miles on unpaved roads each trip (Edwards AFB, 2017).

TABLE 3.8-6
CONSTRUCTION EQUIPMENT

	Equipment			One-Way Vehicle Trips		
Construction Phase	**Equipment Type**	**Quantity**	**Usage Hours**	**Average Daily Worker Trips**	**Average Daily Vendor Truck Trips**	**Total Haul Truck Trips**
Solar Facility Construction	Excavators	9	1.1	1,100	843	5,200
	Forklifts	25	0.5			
	Generator Sets	4	8			
	Off-Highway Tractors	3	0.3			
	Off-Highway Tractors	3	0.5			
	Other Construction Equipment	30	2			
	Other Construction Equipment	20	1.1			
	Other Material Handling Equipment	10	1.5			
	Rubber Tired Dozers	2	1.4			
	Scrapers	4	1.6			
	Tractors/Loaders/Backhoes	35	0.7			
	Trenchers	20	1.2			
Gen-Tie Construction	Cranes	1	1.6	116	60	0
	Excavators	1	6			
	Other Construction Equipment	2	2			
	Other Construction Equipment	2	4			
	Other Material Handling Equipment	1	4			
	Tractors/Loaders/Backhoes	1	4			

SOURCE: Dudek, 2017.

Operational Assumptions

Area Sources

CalEEMod emission factors were used to estimate operational emissions from area sources, which include architectural coatings. VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers used during building maintenance. The VOC evaporative emissions from application of non-residential surface coatings were calculated based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings. Based on the type of structure for the Operation and Maintenance (O&M) building, it is assumed that the surface area for painting equals two times the floor square footage, with 75 percent assumed for interior coating and 25 percent assumed for exterior coating.

During operation and maintenance, one of the main sources of GHG emissions would be fugitive emissions from equipment containing SF_6 gas installed at the proposed onsite substations. SF_6 has a GWP of 23,900 using CO_2 as a reference value with a GWP of 1 (UNFCC, 2014). The only piece of project equipment that would have SF_6 gas would be the 230 kV breakers which would be located at the substation. It is estimated that the project would have up to three 230 kV breakers, for a total of 576 lbs of SF_6 gas. The proposed project's circuit breakers would have a maximum annual leak rate of 0.5 percent, based on the manufacturer's guaranteed specifications. The project would be required to report annual SF_6 gas emission, whether normal or accidental, to CARB under Title 17, Sections 95350 through 95339 of the California Code of Regulations.

Consumer products are various solvents used in non-industrial applications which emit ROGs during their product use. These typically include cleaning supplies, kitchen aerosols, cosmetics and toiletries. Landscaping are emissions from landscaping equipment that is used at the facility.

Energy Sources

Electricity use would contribute indirectly to GHG emissions; however, since GHG emissions occur at the site of the power plant, which is typically off site, they were not quantified for this project.

Mobile Sources

Mobile sources for the project would primarily be motor vehicles (automobiles and light-duty trucks) traveling to and from the project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Based on conservative estimates for vehicular travel, the project is anticipated to have up to 8,778 trips per year during operation, accounting for the commutes and performance of regular inspection and maintenance activities by 24 full-time-equivalent staff. Estimated activity data from the developer and CalEEMod were used to calculate emissions from this source category.

Solid Waste

The project would generate solid waste, and therefore, result in CO_2e emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation were used to estimate GHG emissions associated with solid waste. Solid waste would be generated through maintenance activities and the O&M building.

Water and Wastewater

Supply, conveyance, treatment, and distribution of water for the project require the use of electricity, which would result in associated indirect GHG emissions. Similarly, wastewater generated by the proposed project requires the use of electricity for conveyance and treatment, along with GHG emissions generated during wastewater treatment. The project developer provided water consumption estimates for both indoor and outdoor water use and associated electricity consumption from water use and wastewater generation and emissions were estimated using CalEEMod.

Off-Road Vehicles

To conduct maintenance activities onsite, including but not limited to panel replacement and repair, it was assumed that two forklifts and two backhoes would be employed for 8 hours a day, 12 days a year. This information in conjunction with CalEEMod values were used to estimate operational off-road vehicle GHG emissions in CalEEMod.

Carbon Sequestration

Carbon sequestration is the process by which CO_2 is removed from the atmosphere and deposited into a carbon reservoir (e.g., vegetation). Trees and vegetation take in CO_2 from the atmosphere during photosynthesis, break down the CO_2, store the carbon within plant parts, and release the oxygen back into the atmosphere. Operation of the solar facility would lead to a reduction in the rate of natural carbon sequestration because of the removal of desert vegetation and biological soil crust. The rate of carbon uptake for the project site is estimated to be 0.93 MT of CO_2 per acre per year (Wohlfahrt et al., 2008; Schlesinger, et al., 2009). It was conservatively assumed that all desert vegetation within the disturbed area of the project site would be removed.

3.8.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was considered significant related to air quality if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

NEPA

The methodology to assess impacts related to GHG emissions and climate change under NEPA is continuing to evolve as consensus forms as to how best to evaluate such effects at both proposed action-specific and cumulative levels. The Council on Environmental Quality (CEQ) published revised draft guidance on December 18, 2014, for federal agencies to improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for federal actions under NEPA (CEQ,2014).[11] For example, the CEQ proposes that agencies consider the direct and indirect GHG emissions from a proposed action and its alternatives and quantify and

[11] On August 1, 2016, the CEQ issued guidance to assist federal agencies in consideration of the effects of GHG emissions and climate change in their NEPA reviews (CEQ, 2016). However, the CEQ withdrew its final guidance for Federal agencies on how to consider greenhouse gas emissions and the effects of climate change in National Environmental Policy Act (NEPA) reviews, a Notice of Availability for which was published on August 5, 2016 (81 FR 51866). As explained in the Notice of Availability, the withdrawn guidance was not a regulation. Pursuant to EO 13783, "Promoting Energy Independence and Economic Growth," of March 28, 2017, the guidance has been withdrawn for further consideration. Therefore, this project would fall under the CEQ revised draft guidance on December 18, 2014.

disclose those emissions in the environmental document. The CEQ also recommends that agencies should consider implications of climate change for the environmental effects of a proposed action and that agencies consider mitigation measures to reduce proposed action-related GHG emissions from all phases and elements of the proposed action and alternatives over their expected life, subject to reasonable limits based on feasibility and practicality.

The CEQ recommends that agencies consider 25,000 MT of CO_2e emissions on an annual basis as a reference point below which a quantitative analysis of greenhouse gas is not recommended unless it is easily accomplished based on available tools and data. Therefore, for the purposes of a conservative NEPA analysis, estimated GHG emissions are compared to a threshold of 25,000 MT CO_2e per year, which is equivalent to the mandatory emissions reporting threshold, to determine whether the GHG emissions would contribute substantially to global climate change.

CEQA

For this analysis, an environmental impact was significant related to greenhouse gas emissions if it would result in any of the effects listed below. These effects are based on common CEQA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice. A project would have a significant impact related to GHG emissions if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The County of Kern has not developed a quantified threshold of significance for GHG emissions, but a project found to contribute to a net decrease in GHG emissions and found to be consistent with the adopted implementation of the CARB AB 32 Scoping Plan is presumed to have less-than-significant GHG impacts. The EKAPCD adopted an addendum to their CEQA Guidelines to address GHG impacts, including quantitative thresholds for determining significance of GHG emissions. A project is considered to have a significant project or cumulatively considerable impact if it would result in GHG emissions that would exceed 25,000 tons per year (EKAPCD, 2012).

3.8.3 Analysis of Environmental Effects

3.8.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Alternative A would result in GHG emissions from the construction, operation, and maintenance of the project. Project emissions were estimated and are shown in **Table 3.8-7**, *Estimated Annual Construction Greenhouse Gas Emissions*. Below is a discussion of the emissions and sources that would be associated with Alternative A.

Construction

Alternative A would involve construction of the project over a 2-year schedule that would likely occur over three calendar years, (July 2020 through July 2022). GHG emissions would be generated onsite by off-road construction equipment and vehicles (e.g., excavators, tractors, trenchers, forklifts,

cranes) that would be used to prepare the project site and construct the solar facility and associated gen-tie line, and offsite by vehicles that would transport workers to the work sites and haul panels and various materials and supplies to and from the site. For all assumptions used to estimate construction emissions, including the associated CalEEMod output files, refer to Appendix B2.

Table 3.8-6 shows the estimated GHG emissions that would be generated by construction activities for each calendar year during the 24-month construction period associated with Alternative A (construction occurs for 6 months in 2020, 12 months in 2021, and 6 months in 2022). As shown in the table, annual CO_2e construction emissions associated with Alternative A would vary between 4,060 and 8,083 MT per year, which would be well below the federal CEQ screening threshold of 25,000 MT per year. Construction-related GHG emissions would not contribute substantially to global climate change.

TABLE 3.8-7
ESTIMATED ANNUAL CONSTRUCTION GHG EMISSIONS FOR ALTERNATIVE A

	Metric Tons per Year			
Construction Emissions	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
2020	3781.76	0.34	0.00	3,790.26
2021	7,591.43	0.68	0.00	7,608.45
2022	3,936.73	0.36	0.00	3,945.72
Total Construction Emissions	**15,309.83**	**1.38**	**0.00**	**15,344.43**
CEQ Significance Threshold				25,000
Significance Threshold Exceeded?				**NO**

NOTES: Refer to Appendix B2 for details regarding the GHG emissions estimates.
CH_4 = methane, CO_2 = carbon dioxide, CO_2e = carbon dioxide equivalent, N_2O = nitrous oxide

SOURCE: Dudek, 2018

As shown in Table 3.8-6, the estimated total GHG emissions during construction of Alternative A would be approximately 3,790 MT CO_2e in 2021, 7,608 MT CO_2e in 2021 and 3,945 MT CO_2e in 2022, for a total of 15,344 MT CO_2e over the 2-year construction period. The construction period total emissions of 15,344 MT CO_2e is less than the CEQ 25,000 MT CO_2e threshold and thus Alternative A would not contribute substantially to global climate change. Additionally, since the project is a renewable energy facility, operation of the proposed facility would potentially offset GHG emissions that would have otherwise been generated by fossil-fuel power plants.

Operation

Once operational, GHG emissions generated by Alternative A would be limited to routine maintenance and monitoring activities. Long-term GHG emissions would be generated from motor vehicle trips to and from the project site; energy use (natural gas or electricity consumed by the project); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. In addition to direct and indirect emissions of GHGs, Alternative A would result in the clearing of land and potential complete removal of the existing

desert ecosystem over the entire project site. Land clearing would reduce the ongoing natural carbon uptake by vegetation and biological soil crusts, where they occur. As discussed previously in Section 3.8.1.3, studies of Mojave Desert vegetation indicate that the desert may uptake carbon in amounts equivalent to 0.93 MT CO_2 per acre per year. It is assumed that the entire 4,000-acre project site would be cleared and graded resulting in the removal of up to 4,000 acres of vegetated desert ecosystem. Based on this conservative assumption, the maximum carbon uptake expressed as CO_2 that would be eliminated as a result of project-related ground disturbance under Alternative A would be about 3,720 MT CO_2 per year. As indicated in Section 3.8.1.3, the quantity, location, and depth of caliche deposits at the project site are not known. No methodology has been developed to gather such data on the site and the rate of potential loss of CO_2 from $CaCO_3$ due to disturbance and/or vegetation removal is not currently known. Therefore, while it is assumed that some stored inorganic carbon could be released from onsite soils as CO_2, no quantitative method is available to estimate the amount. For the estimated operation year (2020) project-generated GHG emissions from area sources, energy usage, motor vehicles, solid waste generation, and water usage and wastewater generation are shown in **Table 3.8-8**, *Estimated Operational Greenhouse Gas Emissions.*

TABLE 3.8-8
ESTIMATED ANNUAL OPERATIONAL GHG EMISSIONS FOR ALTERNATIVE A

	Metric Tons per Year			
Operational Emissions	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Energy	0.00	0.00	0.00	0.00
Area	42.44	0.01	0.00	74.71[1]
Mobile	99.35	0.01	0.00	99.53
Off-Road	4.89	0.01	0.00	4.93
Waste	7.63	0.45	0.00	18.91
Water	52.88	0.37	0.01	62.7
Lost Carbon Sequestration	3,720[2]	0.00	0.00	3,720
Total Net Operation Emissions*	**3,919.56**	**0.83**	**0.01**	**3,948.65**
CEQ Significance Threshold				25,000
Significance Threshold Exceeded?				**NO**

NOTES: Refer to Appendix B2 for details regarding the GHG emissions estimates.
CH_4 = methane, CO_2 = carbon dioxide, CO_2e = carbon dioxide equivalent, N_2O = nitrous oxide
[1] Includes emissions from SF_6 (576 pounds of SF_6 assuming a 5% leak rate = 31.22 MT CO_2e per year)
[2] 0.93 (Carbon Update factor)* 4,000 acres = 3720 MT CO_2e

SOURCE: Dudek, 2018

As shown in Table 3.8-8, the estimated annual GHG emissions from Alternative A would be approximately 3,949 MT CO_2e per year as a result of project operations. The operational total emissions of 3,949 MT CO_2e is below the CEQ significance threshold of 25,000 MT CO_2e and thus Alternative A would not contribute substantially to global climate change. Additionally, since the project is a renewable energy facility, operation of the proposed facility would potentially offset GHG emissions that would have otherwise been generated by fossil-fuel power plants. Alternative

A is expected to produce 1,847,040 megawatt-hours (MWh) per year. The latest published GHG emission factor for SCE is 0.256 MT CO_2e/MWh (SCE, 2017a). SCE reported that 28 percent of its power mix was renewable in 2016 (CEC, 2017a). Therefore, the non-renewable GHG emission factor would be 0.356 MT CO_2e/MWh. Thus, Alternative A would provide a potential reduction of 656,752 MT CO_2e per year if the renewable electricity generated by the project were to be used instead of electricity generated by fossil-fuel sources. Annualized operational GHG emissions for Alternative A are calculated to be 3,949 MT CO_2e per year. Thus, the net reduction in GHG emissions would be 652,776 MT CO_2e per year and 19,583,280 MT CO_2e over a 30-year project lifetime. However, this reduction is not considered in the significance determination of the project's GHG emissions, but is provided for disclosure purposes.

Decommissioning

GHG emissions would be generated by decommissioning activities for each calendar year during the 24-month decommissioning period associated with Alternative A. It is anticipated that GHG emissions that would be associated with decommissioning of the project would be similar to those that would be generated during the construction phase of the project, which would be well below the federal CEQ screening threshold of 25,000 metric tons per year.

Emissions Impact Discussion

Implementation of Alternative A would not have a substantial GHG impact under NEPA because construction and operational activities would result in GHG emissions that would be substantially less than the 25,000 MT CO_2e NEPA threshold and the long-term operation of this alternative would result in a net decrease in annual CO_2e emissions as described above. Additionally, implementation of Mitigation Measures MM 3.3-1b through MM 3.3-7b for the gen-tie portion of the project, would further mitigate emissions impacts resulting from the proposed action.

Climate Change Effects on the Proposed Action

In addition to global warming, climate change is expected to result in a suite of additional potential changes that could affect the natural environment, including hydrologic resources (e.g., sea-level rise and flooding), water resource availability, and impacts to biological resources. Many potential changes would not affect the project due to its location and geography (the Mojave Desert at 2,500 feet above mean sea level). A summary of issues and hazards that could affect the project are discussed below.

Hydrologic Resources

Climate change is anticipated to affect the frequency and intensity of extreme weather events, including large storm events and more severe droughts in western watersheds (CDWR, 2008; 2011). The project site and its vicinity could experience an increase in the intensity of high rainfall and flood events, which could result in greater stormwater runoff, flash flooding, an increase in soil erosion onsite, and sedimentation onsite and downstream from the site. As discussed in Section 3.16, *Hydrology and Water Quality*, Mitigation Measure MM 3.16-5b for the gen-tie portion of the site, includes the preparation of a Drainage Plan. Implementation of this plan would minimize or avoid the degradation of the project site from increased runoff, especially during major storm events.

Water Resources Availability

As discussed in Section 3.16, *Hydrology and Water Quality*, the project site and immediate vicinity contain only ephemeral drainages and washes. Surface waters in the project area and its immediate vicinity occur only during substantial precipitation events, when surface runoff occurs. Climate change is expected to result in some degree of reduction of precipitation, and periods of drought could increase, resulting in an overall reduction in the availability of water in the project area.

In the event that climate change results in reduced precipitation within the project area and its vicinity, some degree of associated reduction in groundwater recharge from rainfall could occur. This situation would not result in increased water requirements by the project, and would not result in additional groundwater pumping during project construction, operation, and maintenance. Therefore, even with potential reductions in total precipitation volume associated with future climate change, no increase in water use would be required.

Other Issues

In addition to the resource issues discussed above, potential climate change-related impacts associated with soil moisture and fugitive dust concentrations also could have effects on the project site.

Soil Moisture. Much of the rainfall that occurs in this region of California is lost through evaporation and evapotranspiration. Soil moisture at the project site is characteristically low. Although precise changes are impossible to predict, climate change could result in the increase of extreme weather events, including droughts, heat waves, and an overall reduction in precipitation. These conditions could result in a concurrent reduction in soil moisture content at the site and regionally. However, reductions in soil moisture content would not substantially affect operation and maintenance, and would not require any change in water resources usage. Additionally, the proposed facilities would in no way support additional drying of soils onsite, or otherwise exacerbate potential changes in soil moisture associated with climate change.

Fugitive Dust. As discussed in Chapter 2, *Proposed Action, Project Description, and Alternatives*, operation and maintenance would include panel washing to remove dust and dirt build-up on solar panels, which reduces the amount of incoming solar radiation striking the active photovoltaic layer within the panel. Although climate change could result in some degree of reduction of soil moisture, as discussed above, soil moisture is already very low under current conditions. Any further reductions in soil moisture would be inconsequential in terms of the absolute amount of water contained in onsite soils. Therefore, any potential further reductions in soil moisture associated with climate change are not anticipated to result in a substantial increase in fugitive dust emissions.

Hazards

Heat-related hazards, including potential increases in wildland fire and heat waves, could be exacerbated by climate change (IPCC, 2013b; International Strategy for Disaster Reduction, 2008).

Wildland Fire Risks. Climate change generally would result in a small increase in temperature, and also could result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves (IPCC, 2013b; ISDR, 2008)

during operation of Alternative A. Although the risk of wildfire that could affect the site could increase as a result of climate change, these potential increases in risk are expected to be offset by ongoing compliance with the worker safety and fire protection regulations. Therefore, no additional mitigation is recommended.

Heat Waves. The frequency of occurrence and the severity of heat waves could increase as a result of climate change (IPCC, 2013b; ISDR, 2008). Heat waves could result in increased potential risk to employees. However, the selected developer would be required to meet state requirements for worker safety associated with heat stress. No supplemental actions are recommended.

CEQA: Impact Significance Determination

Impact 3.8-1: The project would generate greenhouse gas emissions, either directly or indirectly, that may have an impact on the environment.

As described in the NEPA discussion, implementation of the project would result in construction and operational activities that would generate GHG emissions up to 15,344.43 MT CO_2e over the three years of construction, which is equivalent to 16,914.34 tons per year. These short-term emissions would be below the EKAPCD's threshold of 25,000 tons CO_2e per year, and would represent a less-than-significant impact. In addition, long-term operation of the project would result in a net reduction in emissions, resulting in a beneficial impact.

Alternative A would also be consistent with the strategies recommended by California's Climate Change Scoping Plan. In order to meet the AB 32 GHG emissions reduction mandate, the Scoping Plan relies on achievement of the 33 percent RPS by 2020 (see Impact 3.8-2 discussion for details). The project and other similar projects are essential to achieving the RPS. Further, the project is reasonably expected to displace region-wide and statewide emissions of GHGs over the expected life of the project. Additionally, implementation of Mitigation Measures MM 3.3-1b through MM 3.3-6b for the gen-tie portion of the project, would further mitigate emissions impacts resulting from the proposed action.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1b through MM 3.3-6b for the gen-tie portion of the project (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.8-2: The project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Implementation of CARB's Scoping Plan Measures/Recommended Actions discussed in Section 3.8.1.2 are needed to obtain AB 32 goals. Of the measures identified in the CARB Scoping Plan, one measure (i.e., Action E-3) is considered to be applicable to the project. Action E-3 relates to renewable energy and the RPS, which is intended to increase California's renewable energy production to 20 percent by 2010, and to 33 percent by 2020. The CPUC estimates that this percentage is currently at 30 percent (CEC, 2017a). A key prerequisite to reaching a target of 33 percent renewables would be

to provide sufficient electric transmission lines to renewable resource zones and system changes to allow integration of large quantities of intermittent wind and solar generation. Alternative A would include a solar array with an electric power generating capacity of at least 21 megawatts (MW). Therefore, the project would be consistent with Action E-3. Overall, Alternative A would be consistent with the applicable Recommended Actions of the CARB Scoping Plan. Additionally, implementation of Mitigation Measures MM 3.3-1b through MM 3.3-6b for the gen-tie portion of the project, would further ensure consistency with the applicable plans, policies, or regulations associated with the proposed action. Therefore, this impact would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.3-1b through MM 3.3-6b for the gen-tie portion of the project (see Section 3.3.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.8.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Implementation of Alternative B would include the construction of a solar facility on approximately 1,500 acres of land located within the same site as Alternative A. It is estimated that the construction duration for Alternative B would be approximately 9 months, which would be 15 months less than Alternative A due to the reduced size of the facility. Given the reduced size of Alternative B compared to Alternative A (i.e., 1,500 acres compared to 4,000 acres – a 62.5 percent reduction), it is assumed that the power rating of the Alternative B facility would be reduced proportionately to at least 8 MW (Alternative A power rating is at least 21 MW). Alternative B would utilize the same gen-tie line route proposed in Alternative A.

The construction and operation emissions for Alternative B were estimated by scaling the model input for Alternative A based on attributes (i.e., area of disturbance, MW rating, and total months of construction) of Alternative B compared to attributes of Alternative A. **Table 3.8-9,** *Estimated Construction GHG Emissions for Alternative B,* summarizes GHG emissions associated with construction of Alternative B. As noted in the table, GHG emissions during the first calendar year of construction would be the same as for Alternative A at about 3,782.10 MT CO_2e since it is the same amount of construction time; however, emissions during the second year would be 1,902.28 MT CO_2e, which would be approximately 25 percent of those that would be generated under Alternative A (as only 3 months of construction would occur), and there would be no third calendar year of construction emissions. The maximum annual GHG emissions generated during construction of Alternative B would be 5,684.38 MT CO_2e, which would be well below the federal CEQ screening threshold of 25,000 MT per year. The scale of decommissioning under Alternative B would be similarly reduced compared to Alternative A. The maximum annual GHG emissions generated during the construction and decommissioning phases of Alternative B would be 5,684 metric tons CO2e, which would be well below the federal CEQ screening threshold of 25,000 metric tons per year. GHG emissions associated with construction of Alternative B would not contribute substantially to global climate change.

TABLE 3.8-9
ESTIMATED ANNUAL CONSTRUCTION GHG EMISSIONS FOR ALTERNATIVE B

	Metric Tons per Year			
Construction Emissions	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
2020	3,781.76	0.34	0.00	3,782.10
2021	1,902.11	0.17	0.00	1,902.28
Total Construction Emissions	**5,683.87**	**0.51**	**0.00**	**5,684.38**
CEQ Significance Threshold				25,000
Significance Threshold Exceeded?				**NO**

NOTES: 2020 emissions are the same as Alternative A, 2021 emissions are 25% of Alternative A (3 months vs 12 months)
CH_4 = methane, CO_2 = carbon dioxide, CO_2e = carbon dioxide equivalent, N_2O = nitrous oxide

SOURCE: ESA, 2018

Under Alternative B, the project would have a power rating of 8 MW as opposed to 21 MW under Alternative A (a 62.5 percent reduction). Therefore, to estimate operational emissions, the totals were scaled by 62.5 percent. **Table 3.8-10**, *Estimated Annual Operational GHG Emissions for Alternative B*, presents the operational emissions by category associated with Alternative B. Additionally, since Alternative B would disturb approximately 1,500 acres of vegetated desert ecosystem, it would result in the elimination of 1,395 MT CO_2 carbon uptake each year (62.5 percent of the amount of carbon uptake that would be lost under Alternative A). Alternative B would displace 6,233 MT CO_2e associated with fossil fuel-generated energy, which is also 62.5 percent of that displaced under Alternative A.

TABLE 3.8-10
ESTIMATED ANNUAL OPERATIONAL GHG EMISSIONS FOR ALTERNATIVE B

	Metric Tons per Year			
Operational Emissions	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Energy	0.00	0.00	0.00	0.00
Area	15.92	0.00	0.00	15.92[1]
Mobile	37.26	0.00	0.00	37.26
Off-Road	1.83	0.00	0.00	1.83
Waste	2.86	0.17	0.00	3.03
Water	19.83	0.14	0.00	19.97
Lost Carbon Sequestration	1,395[2]	0.00	0.00	1,395
Total Net Operation Emissions*	**1,472.7**	**0.31**	**0.00**	**1,473.01**
CEQ Significance Threshold				25,000
Significance Threshold Exceeded?				**NO**

NOTES: CH_4 = methane, CO_2 = carbon dioxide, CO_2e = carbon dioxide equivalent, N_2O = nitrous oxide
[1] Includes emissions from SF_6 (576 pounds of SF_6 assuming a 5% leak rate = 31.22 MT CO_2e per year)
[2] 0.93 (Carbon Update factor)* 1,500 acres = 1395 MT CO_2e

SOURCE: ESA 2018

As shown in Table 3.8-10, operation of Alternative B would result in approximately 1,473 MT CO_2e emissions per year, which would be well below the federal CEQ screening threshold of 25,000 MT CO_2e per year. Thus, GHG emissions associated with construction of Alternative B would not contribute substantially to global climate change. Additionally, since the project is a renewable energy facility, operation of the proposed facility would potentially offset GHG emissions that would have otherwise been generated by fossil-fuel power plants.

Alternative B is expected to produce approximately 700,800 MWh per year. The latest published GHG emission factor for SCE is 0.256 MT CO_2e/MWh (SCE, 2017). SCE reported that 28 percent of its power mix was renewable in 2016 (CEC, 2017a). Therefore, the non-renewable GHG emission factor would be 0.356 MT CO_2e/MWh. Thus, Alternative B would provide a potential reduction of 249,484 MT CO_2e per year if the renewable electricity generated by the project were to be used instead of electricity generated by fossil-fuel sources. Annualized operational GHG emissions for Alternative B are calculated to be 1,473 MT CO_2e per year. Thus, the net reduction in GHG emissions would be 248,001 MT CO_2e per year and 7,440,330 MT CO_2e over a 30-year project lifetime. However, this reduction is not considered in the significance determination of the project's GHG emissions, but is provided for disclosure purposes.

Potential climate change effects on Alternative B would be substantially the same as those discussed for Alternative A (see Section 3.8.3.1).

CEQA: Impact Significance Determination

As described in the NEPA discussion, implementation of Alternative B would result in construction activities that would generate short-term GHG emissions up to 5,684.38 MT CO_2e per year, which converts to 6,265.96 tons CO_2e per year. These short-term emissions would be below the EKAPCD's threshold of 25,000 tons CO_2e per year, and would represent a less-than-significant impact. Long-term operation of Alternative B would result in a net reduction in emissions, resulting in a beneficial impact. In addition, Alternative B would be consistent with the strategies recommended by California's Climate Change Scoping Plan. Therefore, Alternative B would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Mitigation Measures

No mitigation measures are required.

Level of Significance

Impacts would be less than significant.

3.8.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described above. There would be no construction, operation, or decommissioning of the site, therefore, there would be no generation of GHG emissions. Thus, Alternative C would not

cause any impact to global climate change. However, if Alternative A is not built, approximately 656,752 MT CO_2e per year of emissions from electricity generated by fossil-fuel sources would not be reduced by renewable electricity from solar energy production.

CEQA: Impact Significance Determination

Alternative C would result in no impacts to global climate change. However, if Alternative A is not built, approximately 656,752 MT CO_2e per year of emissions from electricity generated by fossil-fuel sources would not be reduced by renewable electricity from solar energy production.

Mitigation Measures

No mitigation measures are required.

Level of Significance

No impact.

3.8.4 Cumulative Impact Analysis

3.8.4.1 NEPA: Cumulative Environmental Effects and Their Significance

GHG emissions are inherently a cumulative concern because it is the accumulation of GHG emissions in the atmosphere around the Earth that results in global climate change; therefore, the geographic scope of cumulative impacts related to GHG emissions and climate change is global. The action alternatives would result in short-term GHG emissions during construction, limited long-term GHG emissions during operation and maintenance, and would result in a long-term reduction of carbon sequestration at the site. However, Alternative A would result in a beneficial effect on cumulative GHG emissions by reducing emissions by 652,776 MT CO_2e per year and Alternative B would reduce emissions approximately 248,001 MT CO_2e per year (approximately one-third that of Alternative A). The long-term cumulative effect that would be associated with either of the action alternatives would be beneficial.

3.8.4.2 CEQA: Cumulative Impact Significance Determination

Although construction of the action alternatives would result in a short-term contribution to cumulative GHG emissions in California, operation of either of the action alternatives would result in a long-term offset of emissions from the electricity generation sector. It is estimated that Alternative A would result in a net reduction of approximately 652,776 MT CO_2e each year, and Alternative B would result in a net reduction of approximately 248,011 MT CO_2e each year. Overall, neither of the action alternatives would contribute cumulatively to long-term GHG emissions in California. Additionally, implementation of Mitigation Measures MM 3.3-1b through MM 3.3-6b for the gen-tie portion of the project, would further ensure that the proposed action would not contribute cumulatively to long-term GHG emissions in California. Thus, Alternative A or Alternative B would not have a cumulatively considerable impact on global climate change, and the overall cumulative impact would therefore be beneficial.

3.8.5 Mitigation Measures

Implement Mitigation Measures MM 3.3-1b through MM 3.3-6b for the gen-tie portion of the project. (See Section 3.3, *Air Quality*, for the full mitigation measure).

3.8.6 Residual Impacts

There would be no significant impacts or substantial effects related to GHG as a result of project implementation and, therefore, there would be no potential for residual impacts to occur.

3.9 Hazardous Materials and Safety

3.9.1 Affected Environment

This EIS/EIR section describes the affected environment for hazardous materials and safety in the proposed project area, including the regulatory and environmental settings. This section also describes the project's potential impacts on sensitive receptors that could be exposed to multiple hazard types and presents mitigation measures where applicable.

The information provided in this section is based in part on the Hazards Assessment Memorandum for the Edwards Air Force Base (AFB) Solar Project (Dudek, 2018), located in Appendix B10, of this EIS/EIR. Information regarding the environmental, health, and safety aspects of potentially hazardous materials used in some solar panel technology is based on studies presented in Appendix B1 of this EIS/EIR.

3.9.1.1 Scoping Issues Addressed

During the scoping period for the EIS/EIR (November 27, 2017, through December 27, 2017), one scoping meeting was conducted with the public and government agencies, and written comments provided by the Kern County Public Health Services Department and the California Department of Toxic Substances Control (DTSC) were received that identified the following issues and concerns related to hazardous materials and waste. These issues and concerns are addressed in this section:

- A business plan should be submitted to the Hazardous Materials Division of the Kern County Environmental Health Division for hazardous materials stored or generated onsite.
- The EIS/EIR should include a mitigation measure for the preparation and implementation of a comprehensive Spill Prevention and Response Plan that outlines the site-specific monitoring requirements and necessary BMPs to prevent hazardous material spills or to contain and cleanup a hazardous material spill, should one occur.

3.9.1.2 Regulatory Framework

Federal

U.S. Environmental Protection Agency

The U.S. Environmental Protection agency (USEPA) was established in 1970 to consolidate in one agency a variety of federal research, monitoring, standard-setting, and enforcement activities to ensure environmental protection. The USEPA's mission is to protect human health and to safeguard the natural environment—air, water, and land—upon which life depends. The USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress, is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for using permits and for monitoring and enforcing compliance. Where national standards are not met, the USEPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality.

Federal Toxic Substances Control Act/Resource Conservation and Recovery Act/Hazardous and Solid Waste Act

The federal Toxic Substances Control Act of 1976 (15 United States Code [USC] 2601–2697) and the Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC 6901–6992) established programs administered by the USEPA for regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (PL 98-616), which affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act. Under the authority of RCRA, the regulatory framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste, is found in Title 40 of the Code of Federal Regulations (CFR) Sections 260–299.

U.S. Department of Transportation

The U.S. Department of Transportation regulates hazardous materials transportation under Title 49 of the USC. State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol and the California Department of Transportation. These agencies also govern permitting for hazardous materials transportation. Title 49 of the CFR reflects laws passed by Congress as of January 2, 2006.

Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 USC 9601–9675), commonly known as "Superfund," was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan. The National Contingency Plan provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants.

Clean Water Act/Spill Prevention, Control, and Countermeasure Rule

The Clean Water Act (CWA) (33 USC 1251 et seq., formerly the Federal Water Pollution Control Act of 1972) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of waters of the United States. As part of the CWA, the USEPA oversees and enforces the Oil Pollution Prevention regulation contained in 40 CFR 112, which is often referred to as the "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend, and implement spill prevention, control, and countermeasure (SPCC) plans. A facility is subject to SPCC regulations if the total aboveground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "Navigable Waters" of the United States.

Storage, treatment, and disposal of nondefense toxic and hazardous materials (10 USC Section 2692).

10 USC Section 2692 is a federal statute limiting and settling forth requirements for storage by non-Department of Defense (DoD) entities of toxic or hazardous materials on DoD installations. However, the statute contains an exception for the storage, treatment, or disposal of materials that will be or have been used in connection with an activity of the DoD or in connection with a service to be performed on a DoD installation for the benefit of DoD. The 20-acre battery storage facility will contain a large quantity of hazardous materials. Here, Edwards AFB will use some of the energy generated by the solar project and benefits financially from the energy generation service being sited on the installation so the exception applies.

Occupational Safety and Health Administration

The mission of the Occupational Safety and Health Administration's (OSHA) is to ensure the safety and health of American workers by setting and enforcing standards; providing training, outreach, and education; and encouraging continual improvement in workplace safety and health. OSHA's staff establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs. OSHA standards are listed in 29 CFR 1910, which include preparation of Health and Safety Plans (HASPs). HASPs identify potential hazards associated with a proposed land use and may provide appropriate mitigation measures as required.

29 CFR Section 1910.120(e) requires all employees working on site exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site to receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards. These employees shall receive any necessary review training.

National Weather Service

Under extreme fire weather conditions, the National Weather Service (NWS) issues Red Flag Warnings for all affected areas. A Red Flag Warning means that any ignition could result in a large-scale damaging wildfire. The project site is located in the NWS Hanford region. Red Flag Warning criteria are as follows:

- Relative humidity 15 percent or less with either sustained winds of 25 miles per hour (mph) or greater or frequent gusts of 35 mph or greater (for duration of 6 hours or more);
- Relative humidity 10 percent or less with 15 mph sustained winds or greater or frequent gusts of 25 mph (for duration of 6 hours or more); and
- Relative humidity of 15 percent or less with 25 mph sustained winds (for duration of 8 hours or more) (NWS, 2012).

The **Defense Environmental Restoration Program (DERP)** requires the Secretary of Defense to carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary, including all active installations, installations subject to base realignment and closure, and formerly used defense sites. The Army, Navy, Air Force, and Defense Logistics Agency each manage their own cleanup programs. The Office of the Secretary of Defense, through the Deputy Under

Secretary of Defense (Installations and Environment), provides program guidance and management oversight for DERP.

The **Edwards AFB Hazardous Waste Management Plan (HWMP)** is the primary guidance document for hazardous waste minimization and management at Edwards AFB (USAF, 2018).

State

California Government Code Section 65962.5 requires that information regarding environmental impacts of hazardous substances and wastes be maintained and provided at least annually to the Secretary for Environmental Protection. The list, commonly referred to as the Cortese List, must contain the following information: sites impacted by hazardous wastes, underground storage tanks with unauthorized releases, solid waste disposal facilities from which there is migration of hazardous wastes, and all cease and desist and cleanup and abatement orders. This information is maintained by various agencies, including DTSC, the State Water Resources Control Board, and the local (typically, county) Certified Unified Program Agency (CUPA). As many records are now maintained digitally and each of the agencies has their own database, the Cortese List is no longer compiled as one list.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) is a state agency and responsible for supervising the drilling, operation, maintenance, plugging, and abandonment of oil, gas, and geothermal wells. DOGGR's regulatory program promotes the sensitive development of oil, natural gas, and geothermal resources in California through sound engineering practices, pollution prevention, and the implementation of public safety programs. DOGGR requires any construction above or near plugged or abandoned oil and gas wells to be avoided, and remediation of wells to meet current DOGGR standards, including wells discovered during excavation or grading.

California Public Utilities Commission General Order 95: Rules for Overhead Electric Line Construction

General Order 95 (GO 95) is the key standard governing the design, construction, operation, and maintenance of overhead electric lines within the State of California. It was adopted in 1941 and updated recently in 2012. GO 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements. Inspection requirements, specified by Rule 31.2, and vegetation clearance requirements, specified by Rule 35, are summarized below:

- Rule 35, Appendix E defines minimum vegetation clearances around power lines. A four-foot radial clearance is required for any conductor of a line operating between 2,400 volts and 72,000 volts (2.4 kiloVolt [kV] and 72 kV) (CPUC, 2016). (Note: This requirement would apply to the proposed project's 34.5).
- Rule 31.2, Inspection of Lines requires that lines be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition, and that lines temporarily out of service are to be inspected and maintained so as not to create a hazard.

Power Line Hazard Reduction (PRC 4292)

Public Resources Code (PRC) Section 4292 requires a 10-foot clearance around any tree branches or ground vegetation at the base of power poles carrying more than 110 kV. The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer, or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of PRC 4296. Project structures would be exempt primarily because of their design specifications.

Power Line Clearance Required (PRC 4293)

PRC 4293 provides guidelines for line clearance, including a minimum of 10 feet of vegetation clearance around any conductor operating at 110 kV or higher.

Minimum Clearance Provisions (14 CCR 1254) and Exemptions (14 CCR 1255)

With respect to minimum clearance requirements, Title 14 of the California Code of Regulations (CCR) Section 1254 presents guidelines pertaining to nonexempt utility poles. Some utility poles are exempt under 14 CCR 1255; exemptions are determined by utility pole characteristics such as conductor continuousness and fire propagation potential. The firebreak clearances required by 14 CCR 1254 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer, or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from the minimum clearance requirements by the provisions of 14 CCR 1255 or PRC 4296. The radius of the cylindroid is 10 feet, which is measured horizontally from the outer circumference of the specified pole or tower, with the height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space would be treated as follows:

- At ground level: remove flammable materials, including ground litter, duff, and dead or desiccated vegetation that would propagate fire;
- From 0 to 8 feet above ground level: remove flammable trash, debris, or other materials, grass, and herbaceous and brush vegetation. All limbs and foliage of living trees would be removed up to a height of eight feet and
- From eight feet to the horizontal plane of highest point of the conductor attachment: remove dead, diseased, or dying limbs and foliage from living sound trees and any dead, diseased, or dying trees in their entirety.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses that use hazardous materials to prepare a hazardous materials business plan (HMBP) that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as unsafe raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste; however, health concerns pertaining to the release of hazardous materials are similar to those for hazardous waste. An HMBP must be submitted to the local CUPA (the Kern County Public Health Services

Department/Environmental Health Division) if the facility handles, uses or stores a hazardous material or mixture containing a hazardous material that has a quantity equal to or greater than 55 gallons of liquid, 500 pounds of a solid substance, or 200 cubic feet of compressed gas, a hazardous compressed gas in any amount, or hazardous waste in any amount. A HMBP must include the following:

- Inventory of hazardous materials at a facility;
- Emergency response plans and procedures in the event of a reportable release or threatened release of a hazardous material; and
- Training for all new employees and annual training for all employees in safety procedures in the event of a release or threatened release of a hazardous material (Cal OES, 2011).

Hazardous Waste Control Act

The Hazardous Waste Control Act created the State Hazardous Waste Management Program, which is similar to but more stringent than the Federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR, which describes the following aspects for the requirements for the proper management of hazardous waste:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the California DTSC.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and to notify workers of exposure (8 CCR 330 et seq.). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

Department of Toxic Substances Control

The DTSC is responsible for the enforcement of the Hazardous Waste Control Act (California Health and Safety Code, Section 25100 et seq.), which creates the framework under which hazardous wastes are managed in California. The law provides for the development of a state

hazardous waste program that administers and implements the provisions of the federal RCRA cradle-to-grave waste management system in California. It also provides for the designation of California-only hazardous waste and development of standards that are equal to or, in some cases, more stringent than federal requirements. While the Hazardous Waste Control Act is generally more stringent than RCRA, until the USEPA approves the California hazardous waste control program (which regulates the generation, treatment, storage, and disposal of hazardous waste), both the state and federal laws apply in California. The Hazardous Waste Control Act lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

According to Title 22, Section 66001 et seq., of the CCR, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, or contaminated, or is being stored prior to proper disposal.

Similar to the USEPA Risk Management Program, the California Accidental Release Prevention (CalARP) Program (19 CCR 2735.1 et seq.) regulates facilities that use or store regulated substances, such as toxic or flammable chemicals, in quantities that exceed established thresholds. The overall purpose of CalARP is to prevent accidental releases of regulated substances and to reduce the severity of releases that may occur. The CalARP Program meets the requirements of the USEPA Risk Management Program, which was established pursuant to the Clean Air Act amendments.

In California, the handling and storage of hazardous materials is regulated by Division 20, Chapter 6.95, of the California Health and Safety Code (Section 25500 et seq.). Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a hazardous materials business plan. Hazardous materials business plans contain basic information about the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state.

Chapter 6.95 of the California Health and Safety Code establishes minimum statewide standards for hazardous materials business plans. Each business shall prepare a hazardous materials business plan if that business uses, handles, or stores a hazardous material (including hazardous waste) or an extremely hazardous material in quantities greater than or equal to the following:

- 500 pounds of a solid substance
- 55 gallons of a liquid
- 200 cubic feet of compressed gas
- A hazardous compressed gas in any amount (highly toxic with a threshold limit value of 10 parts per million or less)
- Extremely hazardous substances in threshold planning quantities (California Health and Safety Code, Section 25503.5).

In addition, in the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by the California Health and Safety Code, facilities are also required to prepare a USEPA Risk Management Program plan and CalARP Program plan. The USEPA Risk Management Program plan and CalARP Program plan provide information about the potential impact zone of a worst-case release and require plans and programs designed to minimize the probability of a release and mitigate potential impacts.

The California Fire Code (CFC) is Chapter 9 of Title 24 of the CCR and was created by the California Building Standards Commission, based on the International Fire Code created by the International Code Council. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The CFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The CFC and the California Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the CFC employs a permit system based on hazard classification. The CFC is updated every 3 years.

Under the Emergency Services Act (California Government Code, Section 8550 et seq.), the State of California developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an integral part of the plan, which is administered by the Governor's Office of Emergency Services. The Governor's Office of Emergency Services coordinates the responses of other agencies, including the California Environmental Protection Agency (CalEPA), California Highway Patrol, Regional Water Quality Control Boards, air quality management districts, and county disaster response offices. California Public Utilities Commission (CPUC) GO 95 is the key standard governing the design, construction, operation, and maintenance of overhead electric lines within the state of California. GO 95 provides fire safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, and standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements.

California Highway Patrol

A valid Hazardous Materials Transportation License issued by the California Highway Patrol (CHP) is required by the laws and regulations of State of California Vehicle Code Section 3200.5 for transportation of either:

- Hazardous materials shipments for which the display of placards is required by state regulations; or
- Hazardous materials shipments of more than 500 pounds, which would require placards if shipping greater amounts in the same manner.

Additional requirements on the transportation of explosives, inhalation hazards, and radioactive materials are enforced by the CHP under the authority of the California Vehicle Code. It is illegal to transport explosives or inhalation hazards on any public highway that is not designated for that

purpose, unless the use of a highway is required to permit delivery or the loading of such materials. The transport of explosives generally requires consistency with additional rules and regulations for routing, safe stopping distances, and inspection stops (14 CCR 6 [1] [1150–1152.10]). Inhalation hazards face similar, more restrictive rules and regulations (13 CCR 6 [2.5] [1157–1157.8]). The transport of radioactive materials is restricted to specific safe routes. According to Section 2.5.4 of the Kern County General Plan Circulation Element, State Route (SR) 14 and SR 58 are designated as adopted commercial hazardous materials shipping routes.

Local

Kern County General Plan

The Kern County General Plan provides goals and policies for the design features of development projects in order to reduce impacts of such projects. The policies and implementation measures in the Kern County General Plan for hazards and hazardous materials that are applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

The Circulation and Safety Elements of the Kern County General Plan establish the goals, policies, and implementation measures related to hazardous materials and safety that are applicable to the project. The General Plan Circulation Element requires the identification of appropriate hazardous materials shipping routes, and reduction in use of County-maintained roads and city-maintained streets for transportation of hazardous materials. The General Plan Safety Element requires that the Kern County Multi-Hazard Mitigation Plan be used as a source document for the formulation of potential mitigation (AMEC, 2012).

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

1.3 Physical and Environmental Constraints

<u>Goal</u>

Goal 1: To strive to prevent loss of life, reduce personal injuries and property damage, and minimize economic and social diseconomies resulting from natural disaster by directing development to areas that are not hazardous.

Policy

Policy 1: Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained (Map Code 2.1 [Seismic Hazard], Map Code 2.2 [Landslide], Map Code 2.3 [Shallow Groundwater], Map Code 2.5 [Flood Hazard], Map Codes 2.6–2.9 and Map Code 2.10 [Nearby Waste Facility], and Map Code 2.11 [Burn Dump Hazard]) to support such development unless appropriate studies establish that such development will not result in an unmitigated significant impact.

Kern County General Plan Chapter 2: Circulation Element

2.5.4 Transportation of Hazardous Materials

Transportation-related accidents and spills of hazardous materials pose a serious threat to the traveling public and nearby sensitive land uses. Transportation of hazardous materials poses a short-term threat to public health.

Goal

Goal 1: Reduce risk to public health from transportation of hazardous materials.

Policies

Policy 1: The commercial transportation of hazardous material, identification, and designation of appropriate shipping routes will be in conformance with the adopted Kern County and Incorporated Cities Hazardous Waste Management Plan.

Policy 2: Kern County and affected cities should reduce use of County-maintained roads and city maintained streets for transportation of hazardous materials.

Implementation Measure

Measure A: Roads and highways utilized for commercial shipping of hazardous waste destined for disposal will be designated as such pursuant to California Vehicle Code Sections 31303 et seq. Permit applications shall identify commercial shipping routes they propose to utilize for particular waste streams.

Kern County General Plan Chapter 4: Safety Element

4.9 Hazardous Materials

Policy

Policy 2: Innovative technologies to manage hazardous waste streams generated in Kern County will be encouraged.

Implementation Measures

Measure A: Facilities used to manufacture, store, and use of hazardous materials shall comply with the Uniform Fire Code, with requirements for siting or design to prevent onsite hazards from affecting surrounding communities in the event of inundation.

Kern

The Kern County Wildland Fire Management Plan documents the assessment of wildland fire situations throughout the State Responsibility Areas within the County. The Kern County Fire Department Wildland Fire Management Plan provides for systematically assessing the existing levels of wildland protection services and identifying high-risk and high-value areas that are potential locations for costly and damaging wildfires. The goal of the plan is to reduce costs and losses from wildfire by protecting assets at risk through focused pre-fire management prescriptions and increasing initial attack success. Based on this assessment, preventive measures are implemented, including the creation of wildfire protection zones.

Kern County Public Health Services Department/Environmental Health Services Division

The County of Kern Environmental Health Services Division is the CUPA for the project area, which provides site inspections of hazardous materials programs (aboveground storage tanks, underground storage tanks, hazardous waste treatment, hazardous waste generators, hazardous materials management and response plans, and the CFC). This department also provides emergency response to hazardous materials events, performing health and environmental risk assessment, and substance identification.

The Hazardous Waste Plan provides policy direction and action programs to address current and future hazardous waste management issues that require local responsibility and involvement in Kern County.

In addition to the General Plan, the Safety and Seismic Element of the Mojave Specific Plan includes objectives and policies related to hazardous materials and safety that are applicable to the project, including protection of the community from human-caused hazards, the proper handling of hazardous materials, and that information on hazardous materials handling is available to fire protection and other safety agencies in accordance with the Uniform Fire Code.

The South of Mojave-Elephant Butte Specific Plan includes an implementation measure related to hazardous materials and safety that prohibits the issuance of building permits within areas subject to inundation.

The West Edwards Road Settlement Specific Plan includes goals, policies and implementation measures that require that development occur outside of areas identified as primary floodways, the incorporation of measures to ensure that developments will not be hazardous, and that developments that would be hazardous to public health and safety be prohibited. This specific plan also requires that site development comply with the Kern County Flood Damage Prevention Ordinance and Kern County Zoning Ordinance, and that projects within 300 feet of an identified seismic hazard area comply with the provisions of the Geological Hazard Combining District pursuant to the Kern County Zoning Ordinance.

The Willow Springs Specific Plan includes implementation measures related to hazardous materials and safety, including ensuring the proper design and placement of onsite waste disposal systems and detention basins or facilities.

To ensure consistency in the administrative requirements, permits, inspections, and enforcement related to the handling and storage of hazardous wastes and materials, CalEPA oversees the Unified Program and certifies local government agencies as CUPA to implement hazardous waste and materials standards. The Kern County Environmental Health Services Department (EHSD) is the CUPA for the project area. As the CUPA, the EHSD is responsible for programs, permitting, and fees related to hazardous material disclosure, business emergency plans, hazardous waste, underground storage tanks, aboveground petroleum storage tanks, and the CalARP Program.

3.9.1.3 Environmental Setting

This EIS/EIR section describes the existing physical environmental conditions in the vicinity of the project as they relate to the potential hazardous materials and waste impacts of the proposed project.

Regional Setting

In Kern County, much of the hazardous waste is generated by the oil industry. Kern County also has many small-quantity generators of hazardous wastes; these include dry cleaners, hospitals and laboratories, automotive maintenance, agriculture, metal plating, and schools. Cleanup of contaminated sites such as leaking gasoline tanks, agricultural product formulators, or asbestos produces a significant portion of hazardous wastes in Kern County. Closed hazardous waste management facilities may contain large volumes of contaminated soil (Kern County, 2009).

Local Setting

The project site is located on an undeveloped alluvial plain associated with the southeastern slope of the Tehachapi Mountains. The project site is relatively flat, with elevations ranging from approximately 2,550 feet above mean sea level (amsl) in the northwest sloping gradually to approximately 2,450 feet amsl to the east (Petra Geotechnical, 2012). Ridges, rocky outcrops, and other substantial topographic features are generally absent from the project site.

The general population includes sensitive subgroups that could be at a greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. Individuals who have the potential to be exposed to a release of project-related hazardous materials are those who live within the nearest communities to the project site.

The nearest communities to the project site are Mojave and Rosamond, in addition to the on-base communities located throughout Edwards AFB. The populations of Mojave and Rosamond are approximately 4,200 and 18,000 people, respectively, according to the 2010 Census (U.S. Census Bureau, 2010). The on-base communities at Edwards AFB include the daily workforce of approximately 10,800 people and the military families that occupy 786 family housing units located 8 miles southeast of the project site, near the intersection of Lancaster Boulevard and Rosamond Boulevard. The residents within these nearby communities are at the greatest risk from exposure to emitted pollutants because of their close proximity to the project site.

Some of the proposed gen-tie route option segments, specifically to the north and east, are near the unincorporated town of Mojave. Surrounding land in Mojave includes commercial, industrial, and low-density residential uses. The nearest sensitive receptors to the project site are residential properties across Trotter Avenue, approximately 200 feet north of the site.

Existing Environmental Contamination

A Preliminary Hazardous Materials Memorandum was prepared for the project, based on an Environmental Risk Information Services (ERIS) report. ERIS searched records from federal, state, local, and tribal entities as specified in the American Society for Testing and Materials (ASTM) Standard E1527-13, Section 8.1.8, Sources of Standard Source Information. In order to capture potential impacts to the project area from adjacent sites, a one-eighth-mile buffer was added around the project area boundary, and a 100-foot buffer was added around the gen-tie. Additional information for sites identified in the ERIS report was gathered from the DTSC EnviroStor database (www.envirostor.dtsc.ca.gov) and Regional Water Quality Control Board's GeoTracker database (geotracker.waterboards.ca.gov). The project includes electrical power lines that pass near or through the following hazardous waste sites, which are subject to land-use restriction by the DTSC (Dudek, 2018). **Figure 3.9-1** shows the locations of the following sites:

The Purdy Company, located 3.06 miles northwest of the solar facility and adjacent to the gen-tie route at 12902 United Road, has been reported in the site mitigation and brownfields reuse program (through the DTSC). A deed restriction is reported to have been placed at the site on August 21, 1996. The site is reported to have been cleaned up for commercial/industrial use only. Other uses are allowed only with DTSC written approval.

The United Metal Recovery, located 2.60 miles northwest of the solar facility and adjacent to the gen-tie route at 12433 United Street, has been reported to have contaminated soils at the consolidation pit that was covered with a reinforced concrete cap. Under the DTSC, the site is certified for operation and maintenance. All planned activities are reported to be implemented and remediation continues.

The Silver Queen Junkyard/Commodity Refining Exchange, located 2.07 miles north of the solar facility and adjacent to the gen-tie route at 11847 United Street, was reported as containing hazardous concentrations of lead, copper, zinc, and dioxin in the ash piles and site soils. Removal actions were conducted and completed in June 1999. The removal action involved construction of a concrete cap over areas affected with hazardous concentrations of heavy metals, lead (Pb), copper (Cu), zinc (Zn), cadmium (Cd), and dioxin. This site has reported a deed restriction and was certified by DTSC for operation and maintenance on June 29, 2006.

The Primary Gold Company, located 2.54 miles northeast of the solar facility and adjacent to the gen-tie route, was reported to have abandoned waste (with possible corrosives) and dumped it into a sump. Lack of vegetation was observed and open and unlabeled drums were noted. Site screening took place and a preliminary endangerment assessment (with the DTSC) was recommended to determine the nature of the release.

Commodity Resource & Environmental (also listed as Commodity Refining Exchange), located adjacent to North-South Gen-tie Option 2, was reported to have waste dioxin ash deposited throughout the site. In 1990 a polymer coating was applied on the property and areas of contamination were capped in 2003. This site has reported a deed restriction and was certified by DTSC for operation and maintenance on February 4, 1997.

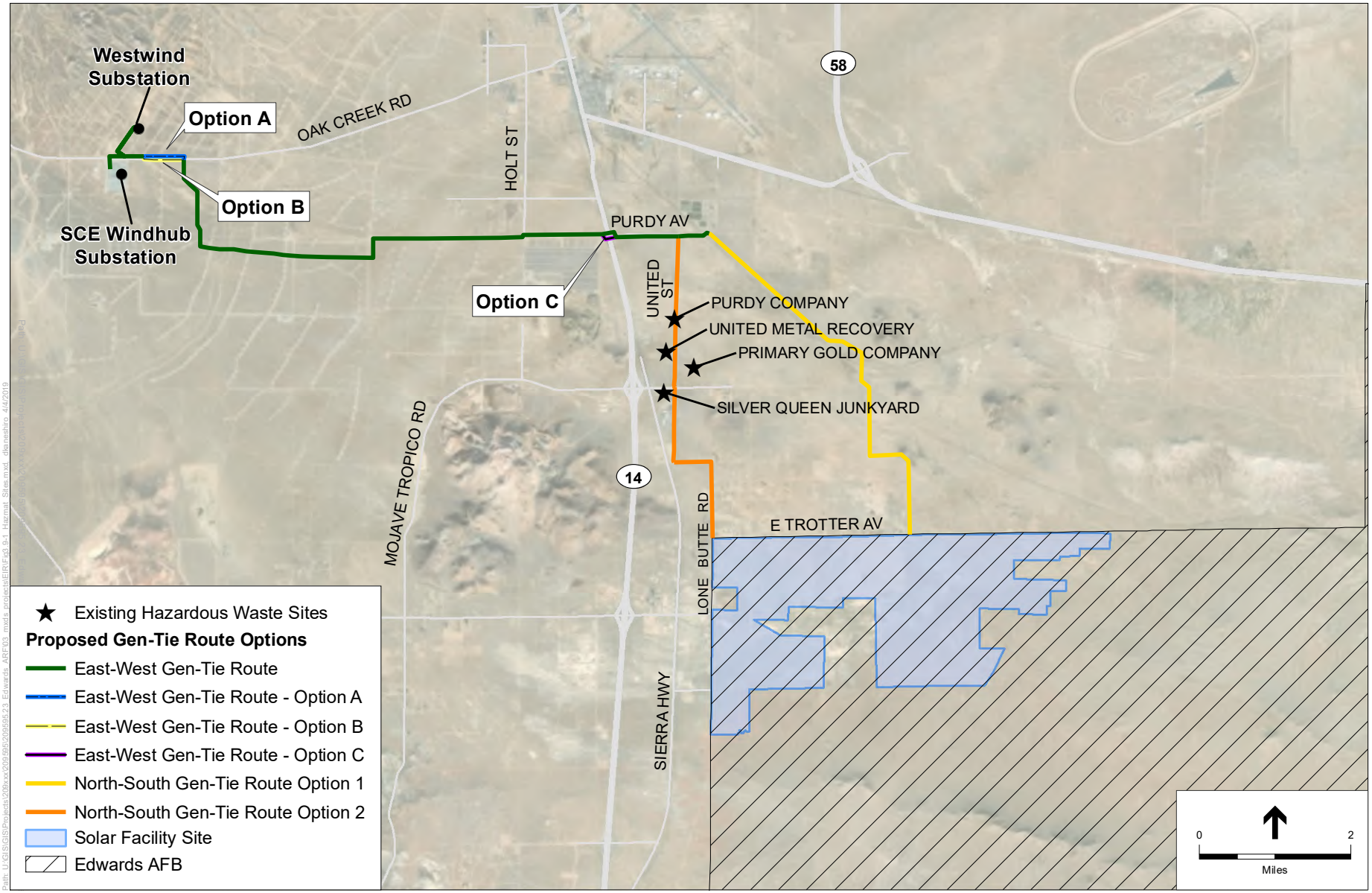


Figure 3.9-1: EXISTING HAZARDOUS WASTE SITES IN THE VICINITY OF THE PROPOSED GEN-TIE LINE

Mobile Smelting, located adjacent to North-South Gen-tie Option 2, was reported as having soils are impacted with dioxin, lead, zinc, cadmium, and copper by direct and windborne deposition. A large area in the southeast portion of the site is impacted. In 2014, approximately 20,000 cubic yards of contaminated soils were excavated and consolidated; a cap was installed over the contaminated soil. As contaminants are still present, the land has been restricted to industrial or commercial use only.

Courtaulds Aerospace, located adjacent to North-South Gen-tie Option 2, was reported as having soils are impacted with dioxin, lead, zinc, cadmium, and copper by direct and windborne deposition from operations at the Mobile Smelting site. DTSC and the responsible parties currently have a voluntary cleanup agreement to conduct a cleanup of the soil contamination. A removal action workplan was submitted to DTSC but was retracted due to uncertainties regarding the appropriate cleanup goal for dioxin contaminants. Final decision making for the Courtaulds site is dependent establishment of dioxin cleanup goals at the adjacent Mobile Smelting site (DTSC, 2018). Further, deed-restrictions have not been implemented as of the date of this report. However, based on DTSC correspondence regarding the site, deed restrictions may apply once remediation is completed.

Western Growth Properties, located at 14501 Holt Street and adjacent to North-South Gen-tie Option 2, was reported to have a leaking underground storage tank in 1999. The contaminant of concern is diesel and the media affected (i.e. soil and/or groundwater) was not specified. The project site maintains a completed – case closed status as of January 4, 2000. No land-use restrictions are reported for this site.

Additionally, Edwards AFB is a Superfund site and was reported in several regulatory databases. Groundwater and soils have been contaminated with various solvent and fuel volatile organic compounds, benzene, toluene, ethyl benzene and xylene, perchlorate, 1,4-dioxane, N-Nitrosodimethylamine, and various metals. In addition to these contaminants, landfills may contain unexploded ordnance or other munitions-related materials. An extensive groundwater-monitoring program is already under way. Many of the 471 potential contamination sites are listed as needing no further investigation or no further action because of insignificant residual contamination. Based on the USEPA Briefing Map, dated June 2008, the contamination plumes appear to be generally down-gradient and outside of the immediate vicinity of the proposed project site. Existing groundwater contaminant plumes have been mapped and are shown in **Figure 3.9-2**.

There is one on-base CERCLA designated site within the project area identified in the Edwards AFB Environmental Restoration Program as Site 416 (see Figure 3.9-2). Site 416 (State Well No. 10/12-22Q1) is located on the project site and was an abandoned water well, likely used for agricultural and domestic uses until the 1950s. Initial sampling at Site 416 showed elevated levels of arsenic in the soil and groundwater. Arsenic was detected in the groundwater at concentrations exceeding the Maximum Contaminant Level (MCL); however, the detections were consistent with regional data. This site was closed by the lead regulatory agency, and no further investigation was recommended (USAF, 2003).

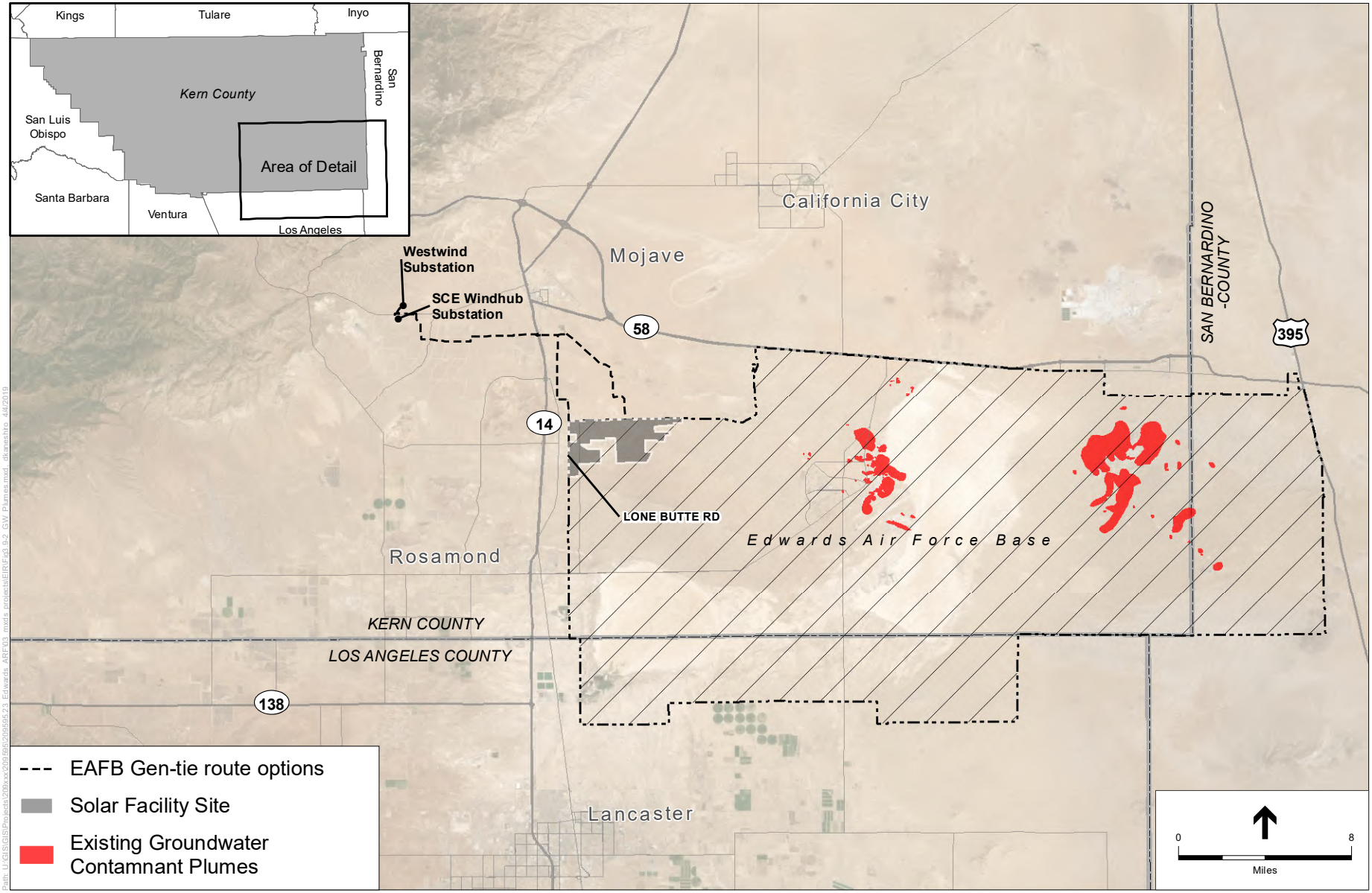


Figure 3.9-2: EXISTING GROUNDWATER CONTAMINANT PLUMES WITHIN EDWARDS AFB

Hazardous Materials Transportation

According to Section 2.5.4 and Figure 11 of the Kern County General Plan Circulation Element, I-5 and SR 14 are designated as adopted commercial hazardous materials routes. Thus, these roadways are equipped to handle the transport of hazardous materials and would provide regional access to the site.

Potential Hazards from Photovoltaic Solar Modules Although the specific type of solar photovoltaic (PV) solar modules has not been selected for the project, it is conceivable that the modules may utilize mono- or poly crystalline silicon c-Si or Cadmium Telluride (CdTe) technology. PV modules may contain small amounts of regulated materials (e.g., Cd, Pb, Se, Cu, Ni, and Ag), which vary from one technology to another.

Microcrystalline panels removed from the site would be recycled or otherwise disposed of at an appropriate waste disposal facility. Silicon based modules can be recycled with aluminum frames and junction boxes dismantled manually at the beginning of the process. If not properly decommissioned, the greatest end-of-life health risk from crystalline solar modules arises from lead-containing solders. Under certain conditions, it is possible for the lead to leach into landfill soils and eventually into water bodies. However, modern solar modules are made with tin or other non-lead solder, and would not pose the health risk that older solar modules have in the past.

In PV modules using “thin-film” CdTe technology, the cadmium is in the environmentally stable form of a compound rather than the leachable form of a metal. The CdTe compound is encapsulated in the PV module, with the PV module containing less than 0.1 percent cadmium by weight. Several peer-reviewed studies have evaluated the environmental, health, and safety aspects of CdTe PV panels (provided in Appendix B1 of this EIS/EIR). These studies have consistently concluded that during normal operations, CdTe PV panels do not present an environmental risk. Specifically, it has been demonstrated that there are no cadmium emissions to air, water, or soil during standard operation of CdTe PV systems. CdTe releases are unlikely to occur during accidental breakage. Furthermore, studies have been conducted to evaluate the panels when the stability of the encapsulation is jeopardized, such as when a broken panel is exposed to fire. These studies indicate that even these events would result in negligible cadmium emissions. A recent research article evaluates the worst-case scenario to estimate potential exposures to cadmium compounds in soil, air, or groundwater. The results show that exposure-point concentrations in soil, air, and groundwater are one to six orders of magnitude below human health screening levels, indicating that it is highly unlikely that exposures to these media would pose potential health risks to onsite workers or offsite residents. Appendix B1 presents additional information regarding CdTe.

3.9.2 Environmental Consequences

This section describes the environmental consequences relating to hazardous materials and safety for the project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.9.2.1 Assessment Methods/Methodology

The analysis of potential impacts of the Proposed Action and alternatives regarding hazardous materials and waste focuses on possible impacts to the health and safety of the public and the

environment. Impacts are identified and evaluated based on relevant lead agency standards, policies, and guidelines. Information regarding hazardous material use and waste practices were reviewed for this analysis and include the following:

1. Hazards Assessment Memorandum for the Edwards AFB Solar Project (Dudek, 2018) (see Appendix B10).
2. Air Force Hazardous Materials Policies and Procedures (AF132-7086).
3. Edwards AFB Waste Management Plan.

The analysis presents the evaluation of the potential for the transportation, storage, and use of hazardous materials during construction and operation of the project to affect the surrounding community and the environment. It is recognized that some hazardous materials must be used for project construction and operation. To assess the potential for a release of hazardous materials to affect the public or the environment, this analysis examines the types and quantities of hazardous materials to be used; the manner in which the developer would handle, store, and dispose of hazardous materials and hazardous wastes; and the transportation of hazardous materials to and from the project site.

This analysis was conducted by examining the type and amount of hazardous materials to be used and, the manner in which the developer would use, transport, and store hazardous materials.

3.9.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was considered significant related to hazardous materials and safety if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice. The project would cause a significant environmental impact related to hazardous materials and safety if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

The County determined in the NOP that the following environmental issue area would result in no impact or a less-than-significant impact and it was therefore scoped out of requiring further review in this EIS/EIR:

- Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Please refer to Appendix A1 of this EIS/EIR for a copy of the NOP and additional information regarding this issue.

3.9.3 Analysis of Environmental Effects

3.9.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Construction

Alternative A would not involve the routine transport, use, or disposal of hazardous materials, as defined by the Hazardous Materials Transportation Uniform Safety Act. However hazardous material may be used during construction. This may include cleaning fluids, fuels (gasoline, diesel fuel, etc.), lubricants, cleaning solvents, paints, and pesticides. Soiled rags and similar applicators and cleanup materials would also require disposal.

PV solar panels that would be installed on the project site would be made from either crystalline silicon or CdTe. Crystalline silicon PV panels may include small amounts of solid materials that are considered to be hazardous. Because such materials are in a solid and nonleachable state, potential broken crystalline silicon PV panels would not be a source of pollution to surface water, stormwater, or groundwater. In PV modules using CdTe technology, the cadmium is in the environmentally stable form of a compound rather than the leachable form of a metal. CdTe releases are unlikely to occur during accidental breakage. Furthermore, studies of the panels where the stability of the encapsulation has been jeopardized, such as if a broken panel were exposed to fire, have indicated that such events still result in negligible cadmium.

The use, storage, and disposal of hazardous materials and waste associated with Alternative A could result in potential adverse health and environmental effects associated with improper management of these materials. In general, the greatest potential effects are associated with the release of these materials into the environment, which could occur from improper storage, disposal, or use hazardous materials. Direct effects of such releases could include contamination of vegetation, soil, and water, which could result in indirect effects to human and wildlife populations. However, all hazardous materials would be handled and stored in compliance with the requirements set forth in the applicable codes and regulations. In addition, the developer and its contractor would store all paints, solvents, and any other hazardous materials in the manner specified by the manufacturer and in accordance with federal, state, and local regulations.

Construction of Alternative A could also result in a potential hazard to the public or personnel if a hazardous material spill or leak were to occur. In accordance with the California Health and Safety Code and Mitigation Measure MM 3.9-1a for the solar facility portion of the project site, as well

as Mitigation Measure MM 3.9-1b for the gen-tie portion of the site, the developer would prepare a HMBP that would delineate storage areas for hazardous material and hazardous waste; describe proper handling, storage, and disposal techniques; describe methods to be used to avoid spills and minimize impacts of a spill; describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction; and establish public and agency notification procedures for spills and other emergencies.

Grading, drilling, or excavation at the site has the potential to mobilize hazardous materials currently in the soil. This could result in exposure of personnel and other sensitive receptors to contaminant levels that could result in short-term and/or long-term health effects. Implementation of Mitigation Measures MM 3.9-1a and MM 3.9-1b (Hazardous Materials Business Plan) and MM 3.9-2a for the solar facility portion of the project site, as well as Mitigation Measure MM 3.9-3b for the gen-tie portion of the site (Hazardous Materials Contingency Plan) would further reduce impacts by requiring the construction contractor to stop work if suspected contamination is identified, cordon off areas of suspected contamination, take appropriate health and safety measures, have a trained individual conduct sampling and testing of suspected material, and, if contamination is found to be greater than regulatory limits, document all actions and notify the Kern County Health and Fire Department along with the Edwards AFB Environmental Management. Contamination from hazardous materials at the site would be reduced with the implementation of recommended mitigation measures, but effects would not be completely avoided.

Further, removal and/or maintenance of vegetation may require pesticide and herbicide use during both construction and operation. If not handled properly, use of these products could create a hazard to the public (construction workers, maintenance employees, and nearby residences), resulting in a potentially significant impact. Implementation of Mitigation Measure MM 3.5-5a for the solar facility portion of the project (Weed Control) would reduce impacts related to use of pesticides and herbicides see Section 3.5, *Biological Resources*). Mitigation Measure MM 3.9-3a for the solar facility portion of the site and Mitigation Measure 3.9-4b for the gen-tie portion of the site, would require the developer to submit evidence that the contractor or personnel applying herbicides have all the appropriate state and local herbicide applicator licenses and comply with all state and local regulations regarding herbicide use, including any terms and conditions of the Pesticide Use Permit issued by the Air Force. Therefore, adverse health effects to the public, construction personnel, wildlife, or sensitive vegetation would be reduced or avoided.

Edwards AFB is on the National Priorities List of Uncontrolled Hazardous Waste Sites under CERCLA as a property of environmental concern. The Air Force will perform final cleanup actions for a variety of sites in the operable unit areas after they select final remedies in the Records of Decision (RODs). Currently, 6 RODs have been signed and 11 more are anticipated by USEPA through 2019. Based on the USEPA Briefing Map, dated June 2008, the contamination plumes appear to be generally down-gradient and outside of the immediate vicinity of the Proposed Action site. Therefore, it is unlikely that construction and operation activities associated with the project would encounter contaminated materials on the base.

As discussed under the "Existing Environmental Contamination" section above and shown in Figure 3.9-1, environmental database searches indicated that some segments of the proposed project gen-tie route options would pass near or through sites with land-use restrictions. Disturbance of contaminated soils or remedial equipment at the sites would require DTSC approval. The exact route of the gen-tie line has not yet been determined, so it is currently unknown if construction of the line would require ground disturbance of any of these sites. If the gen-tie line were to cross one of these sites, as required by Mitigation Measure MM 3.9-7b for the gen-tie portion of the site (Environmental Contamination Avoidance) the developer would contact the DTSC prior to conducting any construction activities to avoid the disturbance of contaminated soils.

Construction equipment and activities have the potential to generate sparks that could ignite a wildfire. Also, as many as 450 construction workers could be onsite during peak project construction and may be exposed to a wildfire if one were to occur. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazards Severity Zone Maps for State and Local Responsible Areas in Kern County, the proposed solar facility and gen-tie line option would be constructed in zones having Moderate Fire Hazard Severity (CAL FIRE, 2007). Moderate zones are typically wildland supporting areas of low fire frequency and relatively modest fire behavior. All project components would be constructed outside of any areas identified as High or Very High Fire Severity Zones. The proposed project is required to comply with all applicable wildland fire management plans and policies established by CAL FIRE, the Kern County Fire Department, and CPUC GO 95: Overhead Electric Line Construction. Accordingly, the proposed project is not expected to expose people or structures to a significantly increased risk of loss, injury, or death involving wildland fires.

Operation and Maintenance

Operation of Alternative A would require limited quantities of hazardous materials to be used and stored. These materials would include oils, lubricants, paints, solvents, degreasers and other cleaners, and transformer mineral oil. Transformer mineral oil would be stored at the onsite substations; all other hazardous materials would be stored in warehouses. Mineral oil may be stored at the solar facility. The generator step-up transformers at the onsite substations may contain dielectric fluid (mineral oil) on a concrete pad surrounded by earthen, fiberglass, or concrete containment berm/curb. The containment area would be lined with an impermeable membrane covered with gravel, and would drain to an underground storage tank. The onsite substations would have a comprehensive SPCC plan in accordance with state and federal regulations. Any stormwater or fluid drained to the tank would be inspected for a sheen prior to disposal. If a sheen is observed, the tank contents would be removed by vacuum truck to an appropriate disposal site. If no sheen or contaminants are detected, the stormwater would be drained onsite.

Alternative A may use solar panels that contain crystalline silicon or CdTe. As stated, because crystalline silicon is in a solid and nonleachable state, crystalline silicon PV panels, including broken panels, would not be a source of pollution to surface water, stormwater, or groundwater. Also, it has been demonstrated that standard operation of CdTe PV systems does not result in cadmium emissions to air, water, or soil. If solar panels containing CdTe are used at the project site, CdTe releases would be unlikely to occur as a result of accidental damage to the crystalline

silicon PV panels. Similarly, fire damage would not result in the release of CdTe. Appendix B1 presents additional information regarding CdTe.

Any hazardous materials used onsite would be stored in appropriate storage locations and containers. Flammable materials, such as paints and solvents, would be stored in nonflammable material storage cabinets with built-in containment sumps. Mitigation Measure MM 3.9-1a for the solar facility portion of the project site, as well as Mitigation Measure MM 3.9-1b for the gen-tie portion of the site (Hazardous Materials Business Plan) requires the developer to prepare an HMBP for project operation. Implementation of an HMBP would reduce potential impacts from the release of motor vehicle fuel or transformer oil, but impacts would not be completely avoided.

Herbicides and pesticides may also be used during project operation. Mitigation Measure MM 3.9-3a for the solar facility portion of the site and Mitigation Measure 3.9-4b for the gen-tie portion of the site (Herbicide Control) would ensure that herbicides and pesticides are properly used in accordance to federal, state, and local regulations. In addition, the solar facility portion of the project is required to comply with the terms and conditions of the Pesticide Use Permit issued by the Air Force and the Base's Integrated Pest Management Plan, as detailed in Mitigation Measure MM 3.9-5a. Therefore, adverse health effects to the public, maintenance personnel, wildlife, or sensitive vegetation would be reduced or avoided.

Alternative A would result in the operation of electrical-power-generating facilities and transmission lines, which pose a potential wildfire ignition source. However, all project components are located outside of any High or Very High Fire Severity Zones as identified by Kern County and CAL FIRE (see discussion under the Construction subheading). In addition, the Proposed Action is required to comply with all applicable wildland fire management plans and policies established by CAL FIRE, the Kern County Fire Department and CPUC GO 95: Overhead Electric Line Construction. Accordingly, the Proposed Action is not expected to expose people or structures to a significantly increased risk of loss, injury, or death involving wildland fires during project operations.

Decommissioning

For decommissioning of the solar facility the solar modules would be dismantled and removed from the site by truck. The solar panels may contain hazardous materials such as crystalline silicon or CdTe. Crystalline silicon panels removed from the site would be recycled or otherwise disposed at an appropriate waste disposal facility. Disposal risks of cadmium would be minimized because of the encapsulation within the panel and because the cadmium can be effectively recycled at the end of the panel's 25- to 30-year life. Nearly 90 percent of each collected PV module would be recycled. Alternative A would include a Decommissioning Plan that would include a collection and recycling program. This recycling program would ensure recycling of project components, proper disposal of hazardous wastes, and minimal disposal of project wastes in landfills. Upon decommissioning, the solar site could be converted to other uses in accordance with applicable land-use regulations in effect at that time. As discussed under "Construction" and "Operation and Maintenance," implementation of Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-3b, MM 3.9-3a, and MM 3.9-4b would require hazardous material containment, reporting, and remediation requirements in the event of a spill or accidental release and would reduce potential

impacts from use of hazardous materials at the site. After decommissioning activities, hazardous materials would not be present.

Decommissioning would result in demolition activities and the use of heavy machinery, which have the potential to generate sparks that could ignite a wildfire. However, all project components are located outside of any High or Very High Fire Severity Zones as identified by Kern County and CAL FIRE (see discussion under the Construction subheading above). In addition, the Proposed Action is required to comply with all applicable wildland fire management plans and policies established by CAL FIRE and the Kern County Fire Department. Accordingly, the Proposed Action is not expected to expose people or structures to a significantly increased risk of loss, injury, or death involving wildland fires during project decommissioning.

CEQA: Impact Significance Determination

Impact 3.9-1: The project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

As discussed in the NEPA analysis above, Alternative A construction, operation and maintenance, and decommissioning activities would require limited use of hazardous materials, but would not involve the routine transport, use, or disposal of hazardous materials, as defined by the Hazardous Materials Transportation Uniform Safety Act.

Construction

Most of the hazardous waste generated by the project would occur during the construction period and would include concrete, cleaning fluids, and solvents. Some solid waste, such as welding materials and dried paint, may also be generated during construction. Hazardous wastes that are generated as a result of the construction of the project would be collected, transported, and disposed of by a licensed waste vendor consistent with applicable laws. Certain materials and products used in the construction of the project may be classified as hazardous materials. During construction of the project, per Mitigation Measure MM 3.9-1a for the solar facility portion of the site and Mitigation Measure MM 3.9-1b for the gen-tie portion of the site, material safety data sheets for all regulated substances present at the project site would be made readily available to onsite personnel. Per Mitigation Measure 3.9-2b, construction debris would be generated, recycled, and disposed of in local landfills. Recyclable materials, including wood, shipping materials, and metals, would be separated when possible for recycling. The disposal of all oils, lubricants, and spent filters would be performed in accordance with all applicable regulations.

Operation and Maintenance

Project operation would require the use of transformer oil at the onsite project substation. All transformers would be equipped with spill containment. Per Mitigation Measure MM 3.9-2a for the solar facility portion of the project site, and Mitigation Measure MM 3.9-3b for the gen-tie portion of the site, all components would have a comprehensive SPCC plan, in accordance with all applicable federal, state, and local regulations. Dust palliatives and herbicides, if used during operation to control vegetation, may be transported to the project site. These materials would be stored in appropriate containers to prevent accidental release. Operational activities are limited to monitoring solar plant performance, conducting scheduled maintenance for onsite electrical

equipment, periodic panel washing (approximately every 3 to 4 months), and responding to utility needs for solar panel adjustment. No heavy equipment would be used during normal project operation. Operation and maintenance vehicles would include trucks (pickup and/or flatbed), forklifts, and loaders for routine and unscheduled maintenance, and water trucks for dust control and solar panel washing. Large heavy-haul transport equipment and cranes may be brought to the project site infrequently for equipment repair or replacement. Long-term maintenance and equipment replacement would be scheduled in accordance with manufacturer recommendations. Solar modules are expected to have a life of 25 or more years. Moving parts, such as motors and tracking module drive equipment, motorized circuit breakers and disconnects, and inverter ventilation equipment, would be serviced on a regular basis, and unscheduled maintenance would be conducted as necessary.

Decommissioning

As described previously under the NEPA analysis, although decommissioning of the solar facility could result in the use and transportation of hazardous materials, Alternative A would include a Decommissioning Plan that would include a collection and recycling program to promote recycling of project components, properly dispose of hazardous wastes, and minimize disposal in landfills. Upon decommissioning, the solar site could be converted to other uses in accordance with applicable land-use regulations in effect at that time. As discussed under "Construction" and "Operation and Maintenance," implementation of Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-3a, MM 3.9-3b, and MM 3.9-4b, would require hazardous material containment, reporting, and remediation requirements in the event of a spill or accidental release and would reduce potential impacts from use of hazardous materials at the site. After decommissioning activities, hazardous materials would not be present. In summary, Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4b, and MM 3.9-7b would prevent or minimize damage to public health, safety, and the environment from the transport, use, or disposal of hazardous materials. Therefore, impacts concerning the routine transport, use, or disposal of hazardous materials would be less than significant with mitigation incorporated.

Mitigation Measures

Implement Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4b, and MM 3.9-7b (see Section 3.9.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Construction, Operation and Maintenance, and Decommissioning

Construction, operation and maintenance, and decommissioning activities associated with Alternative A would require limited use of hazardous materials. Potential impacts that may result from construction of the proposed project may include the accidental release of hazardous materials, such as cleaning fluids, asbestos containing material, and petroleum products, stored

onsite. Implementation of Mitigation Measures MM 3.9-4a and MM 3.9-6b, would require compliance with all applicable Federal, State, and local laws for the identification, removal, and disposal, of any potential asbestos containing materials that may be encountered during project construction. Additionally, if unrecorded wells are identified within the gen-tie site during excavation or grading activities, release of potentially hazardous substances into those wells may present a significant impact resulting from the proposed project. However, implementation of Mitigation Measure 3.9-5b for the gen-tie portion of the project site would ensure that the project proponent coordinates with the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources to prevent the release of hazardous materials into the surrounding environment in the event that an unrecorded well is encountered.

The PV modules and inverters would produce no waste during operation. If solar panels containing CdTe are used at the project site, CdTe releases would be unlikely to occur as a result of accidental damage to the crystalline silicon PV panels. Similarly, fire damage is unlikely to result in the release of CdTe. Appendix B1 presents additional information regarding CdTe. Mineral oil would be located in each enclosed transformer, but secondary containment would be provided in accordance with applicable federal, state, and local laws and regulations. The mineral oil contained in each transformer does not normally require replacement, and mineral oil disposal would be in accordance with all applicable federal, state, and local laws and regulations. As stated previously, no schools are located in the vicinity of the project area. An adverse risk related to exposure to hazardous materials would not result from the installation and use of transformers, grading of the site, the application of herbicides, or other construction or operation processes because of the distance between the sensitive receptors and the project site. In addition, the proposed project would not involve the routine transport, use, or disposal of hazardous materials as defined by the Hazardous Materials Transportation Uniform Safety Act.

The closest designated route for the transport of hazardous materials is SR 14, which is located 1 mile west of the project site. Adherence to regulations and standard protocols during the storage, transportation, and usage of any hazardous materials would minimize and avoid the potential for significant impacts. Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4b, and MM 3.9-7b would prevent or minimize damage to public health, safety, and the environment from the use, release, or threatened release of hazardous materials. In addition, hazardous materials and waste management during construction activities would follow the requirements of the Hazardous Material Management Process and Hazardous Waste Management Plan for Edwards AFB. Therefore, impacts concerning reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be less than significant with mitigation incorporated.

Mitigation Measures

Implement Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4a, MM 3.9-4b, MM 3.9-5a, MM 3.9-5b, MM 3.9-6b, and MM 3.9-7b (see Section 3.9.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.9-3: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.

As identified in the scoping comment letter from DTSC, the proposed gen-tie line would pass near or through multiple sites subject to land-use restrictions by DTSC (DTSC, 2013). Implementation of Mitigation Measure MM 3.9-7b would ensure that the construction of the gen-tie line would not disturb any contaminated soils or remedial equipment on these properties. Edwards AFB is on the National Priorities List of Uncontrolled Hazardous Waste Sites under CERCLA as a property of environmental concern. The Air Force will perform final cleanup actions for a variety of sites in the operable unit areas after they select final remedies in RODs. Based on the USEPA Briefing Map, dated June 2008, potential contamination plumes appear to be generally down-gradient and outside of the immediate vicinity of the proposed project site. Thus, it is unlikely that construction, operation and maintenance, and decommissioning activities associated with the project would encounter contaminated materials on the base. Therefore, impacts related to hazards associated with project implementation on listed hazardous materials sites would be less than significant with mitigation incorporated.

Mitigation Measures

Implement Mitigation Measure MM 3.9-7b (see Section 3.9.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.9-4: Exposes people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

As discussed previously under the NEPA analysis, Alternative A would not increase the potential for wildland fires or expose people or structures to a significant risk of loss, injury, or death involving wildland fires. All project components would be located within a Moderate Fire Hazard Severity Zone as identified by the CAL FIRE State and Local Responsibility Maps. Moderate zones are typically wildland supporting areas of low fire frequency and relatively modest fire behavior. The proposed project would comply with all applicable wildland fire management plans and policies established by CAL FIRE and the Kern County Fire Department. Additionally, implementation of Mitigation Measure MM 3.9-6a for the solar facility portion of the project site and Mitigation Measure MM 3.9-8b for the gen-tie portion of the site, would require the preparation of a Fire Safety Plan, which would further reduce potential impacts from wildland fires. Accordingly, Alternative A is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.9-6a and MM 3.9-8b (see Section 3.9.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.9.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Alternative B includes the construction, operation, and decommissioning of a utility-scale PV solar facility on up to a maximum of 1,500 acres of non-excess real property located within the same site as Alternative A. Alternative B would utilize the same gen-tie line route option proposed in Alternative A. Adverse effects would be similar to those described for Alternative A, however, because Alternative B would result in approximately one-third the physical development of Alternative A, it is likely that this alternative would result in a reduced construction schedule, thereby reducing the amount of time that hazardous materials are used, stored or transported. This reduction would result in an incremental reduction in the potential for accidental releases of hazardous materials to occur during these activities.

Like Alternative A, Alternative B would be located within a Moderate Fire Hazard Severity Zone as identified by the CAL FIRE State and Local Responsibility Maps. The reduced scale of the Proposed Action would likely reduce the amount of time heavy machinery would be onsite, thereby incrementally reducing the potential to generate sparks that could ignite a wildfire. The Proposed Action would comply with all applicable wildland fire management plans and policies established by CAL FIRE, the Kern County Fire Department, and CPUC. Accordingly, the Proposed Action is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

Operation and Maintenance

Alternative B would result in the same hazardous materials effects as described for Alternative A. However, because of the reduced size of this alternative, the geographic area within Alternative B would be smaller than for Alternative A. This smaller size would limit the area within which hazards to the public, workers, and environmental could result and would incrementally reduce the amount of hazardous materials that are used, stored or transported Consequently, hazardous materials–related impacts associated would the operation and maintenance of Alternative B would be reduced relative to Alternative A.

Operation and Maintenance of Alternative B would result in the same wildfire impacts as described for Alternative A.

Decommissioning

Alternative B would cause the same decommissioning-related hazardous materials impacts as Alternative A; however, Alternative B's reduced project size would constrain the area within which accidents or upsets could occur and thereby release hazardous materials. Consequently, hazards and hazardous materials-related impacts associated with decommissioning Alternative B would be reduced relative to Alternative A.

The reduced scale of the Proposed Action would likely reduce the amount of time heavy machinery would be onsite during decommissioning activities, thereby incrementally reducing the potential to generate sparks that could ignite a wildfire. The decommissioning of Alternative B would result in similar wildfire impacts as described for Alternative A.

CEQA: Impact Significance Determination

The impacts for Alternative B would be similar to those described under the CEQA analysis for Alternative A (Impacts 3.9-1 through 3.9-4) above. However, because Alternative B would result in approximately one-third the physical development of Alternative A, it is likely that this alternative would result in a reduced construction schedule, thereby reducing the amount of time that hazardous materials are used or stored on site. However, because this alternative would result in use and storage of the same types of hazardous materials as Alternative A, significance conclusions for the impacts identified for each phase of Alternative B (Construction, Operation and Maintenance, and Decommissioning) would be same as described above for Alternative A. Impacts concerning the routine transport, use, or disposal of hazardous materials; accidental release of hazardous materials; and project implementation within listed hazardous materials sites would be less than significant with mitigation incorporated.

The reduced scale of Alternative B would likely reduce the amount of time heavy machinery would be onsite during construction and decommissioning activities, thereby incrementally reducing the potential to generate sparks that could ignite a wildfire. The entire project would be located within a Moderate Fire Hazard Severity Zone as identified by the CAL FIRE State and Local Responsibility Maps. Therefore, impacts related to exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires would be the same as identified for Alternative A.

Mitigation Measures

Implement Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4a, MM 3.9-4b, MM 3.9-5a, MM 3.9-5b, MM 3.9-6a, MM 3.9-6b, MM 3.9-7b, and MM 3.9-8b (see Section 3.9.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.9.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described above. There would be no construction vehicles, hazardous materials use, or employees to access the site. Therefore, there would be no potential for accidental releases of hazardous materials to occur or for project related wildfire ignition or exposure. Thus, Alternative C would not significantly affect hazards or hazardous materials during the construction, operation and maintenance, and decommissioning phases.

CEQA: Impact Significance Determination

Alternative C would result in no impacts concerning wildfire; the routine transport, use, storage, or disposal of hazardous materials; accidental release of hazardous materials; and project implementation within listed hazardous materials sites.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

3.9.4 Cumulative Impact Analysis

3.9.4.1 NEPA: Cumulative Environmental Effects and Their Significance

Depending on the pathway of exposure, the geographic scope for cumulative effects relating to hazardous materials would be the air basin, watershed boundary, groundwater basin, or extent of affected soils. Materials delivery routes also would be included in the event of a traffic accident–related spill. The temporal scope of hazardous materials impacts would occur throughout the life of the Proposed Action. Many of the cumulative projects identified in Table 3-1 could cause similar impacts related to the potential for release of hazardous materials during routine use, transport, storage, and disposal for construction and operation of these projects. Specifically, other renewable energy projects, such as the Catalina Renewable Energy Project, Rosamond Solar Project, Kingbird Solar Project, Champagne Road Solar PV Project, etc., would involve the use, transportation and storage of similar hazardous materials required for the Proposed Action. An accident involving a hazardous materials release during project construction or operation through upset or accident conditions, including site grading and the use and transport of petroleum-based lubricants, solvents, fuels, herbicides, and pesticides to and from the project site, would be location specific.

Like the Proposed Action, construction, operation and maintenance, and decommissioning of other renewable energy projects could result in impacts related to the potential to encounter hazardous materials.

However, impacts caused by the cumulative projects, in combination with the Proposed Action, would not result in an adverse cumulative hazardous materials impact even if all of the projects were to be constructed simultaneously. Because of the distance from other projects considered in the cumulative analysis, an accidental release or discovery of hazardous materials at the Proposed Action site is not likely to result in combined impacts at the cumulative projects sites. In addition, like the Proposed Action, each of the cumulative projects would be required to follow all local, state and federal policies regarding the use, transportation and storage of hazardous materials and would include mitigation measures to minimize/avoid health effects to the surrounding communities. Therefore, the Proposed Action would not contribute to cumulative impacts from accidental releases or discovery of hazardous materials.

The geographic area for cumulative wildland fire impacts includes the area within 1 mile of the site boundary for wildland fire impacts, and the temporal scope for cumulative wildland fire impacts includes the duration of construction, operation, and decommissioning of the Proposed Action. A cumulative wildland fire impact would occur if multiple projects were to increase the frequency of fires in the same location. Approximately 3 reasonably foreseeable projects are located within 1 mile of the Proposed Action (see Figure 3-1). The Proposed Action would likely be under construction concurrently with at least one of these projects. The cumulative construction impacts of projects under construction at the same time as the Proposed Action could result in increased wildfire ignitions due to the use of heavy equipment, smoking, or welding. The combination of several projects being constructed concurrently in the cumulative study area could substantially increase the frequency of fire in the area above natural conditions. However, the Proposed Action and cumulative projects are located within a Moderate Fire Hazard Severity Zone and must comply with all applicable wildland fire management plans and policies established by CAL FIRE, the Kern County Fire Department, and CPUC (if applicable). As a result, the overall cumulative increase in fire frequency would not be substantial.

Operation of the Proposed Action could result in wildfire ignitions due to the use of outdoor equipment or smoking. Transmission lines can cause wildfire ignitions if maintenance is not properly conducted, if a low-flying plane or helicopter were to crash into the line, or as a result of wildlife collisions. Because the proposed enhanced-use lease (EUL) would last up to 35 years, it is likely that the Proposed Action would operate concurrently with all reasonably foreseeable projects in the cumulative study area. Wildfire ignitions due to operation and use of these cumulative projects could substantially increase the frequency of wildfire ignitions. However, the Proposed Action and cumulative projects are located within a Moderate Fire Hazard Severity Zone and must comply with all applicable wildland fire management plans and policies established by CAL FIRE, the Kern County Fire Department, and CPUC (if applicable). As a result, the overall cumulative increase in fire frequency would not be substantial.

Decommissioning of the Proposed Action could possibly occur at the same time as at least one of the projects in the cumulative study area. The cumulative decommissioning impacts of projects under decommissioning at the same time as the Proposed Action could result in increased wildfire ignitions due to the use of heavy/electrical equipment or smoking. The combination of several projects being decommissioned concurrently in the cumulative study area could substantially increase the frequency of fire in the area above natural conditions. However, the Proposed Action and cumulative projects are located within a Moderate Fire Hazard Severity Zone and must comply with all applicable wildland fire management plans and policies established by CAL FIRE, the Kern County Fire Department, and CPUC (if applicable). As a result, the overall cumulative increase in fire frequency would not be substantial.

3.9.4.2 CEQA: Cumulative Impact Significance Determination

Impacts for the cumulative CEQA analysis would be the same as those described under the cumulative NEPA analysis above. Project implementation within listed hazardous materials sites would be less than significant with implementation of Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4a, MM 3.9-4b, MM 3.9-5a, MM 3.9-5b, MM 3.9-6a, MM 3.9-6b, MM 3.9-7b, and MM 3.9-8b.

In addition, like the proposed project, each of the cumulative projects would be required to follow all local, state, and federal policies regarding wildfire hazards, in addition to the use, transportation and storage of hazardous materials and would include mitigation measures to minimize/avoid health effects to the surrounding communities. Therefore, the Proposed Action would not contribute to cumulative impacts from accidental releases or discovery of hazardous materials. Cumulative impacts related to wildfire; the routine transport, use, storage, or disposal of hazardous materials; accidental release of hazardous materials; or the accidental release of hazardous materials would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4a, MM 3.9-4b, MM 3.9-5a, MM 3.9-5b, MM 3.9-6a, MM 3.9-6b, MM 3.9-7b, and MM 3.9-8b (see Section 3.9.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.9.5 Mitigation Measures

3.9.5.1 Solar Facility Mitigation Measures

MM 3.9-1a: Hazardous Materials Business Plan. Prior to the issuance of grading or building permits, the project proponent shall prepare a Hazardous Materials Business Plan and submit it to Kern County for review and approval.

1. The Hazardous Materials Business Plan shall:
    a. Delineate hazardous material and hazardous waste storage areas;
    b. Describe proper handling, storage, transport, and disposal techniques;
    c. Describe methods to be used to avoid spills and minimize impacts in the event of a spill;
    d. Describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction;
    e. Establish public and agency notification procedures for spills and other emergencies including fires; and
    f. Include procedures to avoid or minimize dust from existing residual pesticide and herbicide use that may be present on the site.

2. The project proponent shall provide the Hazardous Materials Business Plan to all contractors working on the project and shall ensure that one copy is available at the project site at all times.
3. A copy of the approved Hazardous Materials Business Plan shall be submitted to the Air Force.

MM 3.9-2a: Spill Prevention, Control, and Countermeasure Plan. Prior to the issuance of grading or building permits by the County and/or a Notice to Proceed from the Air Force, the developer shall prepare and submit a Spill Prevention, Control, and Countermeasure Plan to Kern Count and to the Air Force for review. The plan will be for the storage and use of transformer oil, gasoline, or diesel fuel at the site in quantities of 660 gallons or greater. The purpose of the plan will be to mitigate the potential effects of a spill of transformer oil, gasoline, or diesel fuel. The plan shall include design features of the project that will contain accidental releases of petroleum and transformer oil products from on-site fuel tanks and transformers**.**

MM 3.9-3a: **Herbicide Control.**

1. The project proponent shall continuously comply with Edwards Integrated Pest Management Plan and the following:
    g. The construction contractor or project personnel shall use herbicides that are approved for use in California, and are appropriate for application adjacent to natural vegetation areas (i.e. non-agricultural use. Personnel applying herbicides shall have all appropriate state and local herbicide applicator licenses and comply with all state and local regulations regarding herbicide use.
    h. Herbicides shall be mixed and applied in conformance with the manufacturer's directions.
    i. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife.
    j. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed; and herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water.
    k. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.
2. The project proponent shall continuously comply with the following:
    a. The construction contractor or project personnel shall use herbicides that are approved for use in California, and are appropriate for application adjacent to natural vegetation areas (i.e. non-agricultural use. Personnel applying herbicides shall have all appropriate state and local herbicide applicator licenses and comply with all state and local regulations regarding herbicide use.
    b. Herbicides shall be mixed and applied in conformance with the manufacturer's directions.
    c. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data

sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife.

d. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed; and herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water.

e. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.

MM 3.9-4a: Asbestos-containing Material. The project proponent shall continuously comply with the following:

1. In the event that suspect asbestos-containing materials (almost anything other than unpainted metal, glass or wood, to include soil in certain locations/circumstances) are uncovered and/or disturbed during project construction, work at the project site shall immediately halt and an appropriate certified asbestos hazardous materials professional (typically a California Certified Asbestos Consultant) shall be contacted and brought to the project site to make a proper assessment of the suspect materials.
2. All potentially friable asbestos-containing materials shall be removed in accordance with Federal, State, and local laws and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines prior to ground disturbance that may disturb such materials. Per the Asbestos NESHAP "…. prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable ACM."
3. All demolition activities shall be undertaken in accordance with California Occupational Safety and Health Administration standards, as contained in Title 8 of the California Code of Regulations, Section 1529, to protect workers from exposure to asbestos. Materials containing more than one percent asbestos shall also be subject to Eastern Kern Air Pollution Control District's regulations. Asbestos in soil is or may be further regulated by California Air Resources Board. Demolition/Renovation shall be performed in conformance with Federal, State, and local laws and regulations, to include the Asbestos NESHAP so that construction workers and/or the public avoid significant exposure to asbestos and asbestos-containing materials.

MM 3.9-5a: Herbicide Application. The project proponent shall continuously comply with the following:

Herbicides shall be applied in accordance with the current Edwards Air Force Base Integrated Pest Management Plan. Physical, mechanical, or other measures must be used to remove or control weeds. Least hazardous, but effective, herbicides shall be used as a last resort.

MM 3.9-6a: Fire Safety Plan. Prior to the issuance of grading or building permits, the project proponent shall develop and implement a fire safety plan for use during construction and operation. The project proponent will submit the plan, along with maps of the project site and access roads, to the Kern County Fire Department for review and approval. The fire safety plan will contain notification procedures and emergency fire precautions including, but not limited to the following:

1. All internal combustion engines, both stationary and mobile, shall be equipped with spark arresters. Spark arresters will be in good working order.
2. Light trucks and cars with factory-installed (type) mufflers will be used only on roads where the roadway is cleared of vegetation. These vehicle types will maintain their factory-installed (type) muffler in good condition.
3. Fire rules will be posted on the project bulletin board at the contractor's field office and areas visible to employees.
4. Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials.
5. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires to prevent them from growing into more serious threats.
6. The project proponent shall make an effort to restrict the use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to periods outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.

3.9.5.2 Gen-tie Mitigation Measures

MM 3.9-1b: Hazardous Materials Business Plan. Prior to the issuance of grading or building permits, and throughout the life of the project, including decommissioning, the project proponent shall prepare and maintain a Hazardous Materials Business Plan (HMBP), as applicable, pursuant to Article 1 and Article 2 of California Health and Safety Code 6.95 and in accordance with Kern County Ordinance Code 8.04.030, by submitting all required information to the California Environmental Reporting System (CERS) at http://cers.calepa.ca.gov/ for review and approval.

1. The HMBP shall:
    a. Delineate hazardous material and hazardous waste storage areas;
    b. Describe proper handling, storage, transport, and disposal techniques;
    c. Describe methods to be used to avoid spills and minimize impacts in the event of a spill;
    d. Describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction;
    e. Establish public and agency notification procedures for spills and other emergencies including fires; and
    f. Include procedures to avoid or minimize dust from existing residual pesticide and herbicide use that may be present on the site.
2. The project proponent shall provide that all contractors working on the project are familiar with the facility's HMBP as well as ensure that one copy is available at the generation tie-line sites at all times.
3. In addition, a copy of the approved HMBP from CERS shall be submitted to the Kern County Planning and Natural Resources Department for inclusion in the project's permanent record.

MM 3.9-2b: Recycle Construction Waste. During construction and decommissioning of generation tie-lines, debris and waste generated shall be recycled to the extent feasible. The project proponent/operator shall designate a Recycling Coordinator to facilitate recycling of all waste through coordination with the onsite contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes. The Recycling Coordinator shall also be responsible for ensuring that wastes requiring special disposal are handled according to State and County regulations that are in effect at the time of disposal. The name and phone number of the coordinator shall be provided to the Kern County Planning and Natural Resources Department.

MM 3.9-3b: Spill Prevention, Control, and Countermeasure Plan. Prior to the issuance of grading or building permits for the generation tie-line installation, the developer shall prepare and submit a Spill Prevention, Control, and Countermeasure Plan to the California Environmental Protection Agency, and the Kern County Planning and Natural Resources Department for review. The plan will be for the storage and use of transformer oil, gasoline, or diesel fuel at the generation tie-line sites. The purpose of the plan will be to mitigate the potential effects of a spill of transformer oil, gasoline, or diesel fuel. The plan shall include design features of the generation tie-line installation project that may contain accidental releases of petroleum and transformer oil products from on-site fuel tanks and transformers.

MM 3.9-4b: Herbicide Control. The project proponent shall continuously comply with the following:

1. The construction contractor or project personnel shall use herbicides that are approved for use by the Environmental Protection Agency, are appropriate for use in California and for application adjacent to natural vegetation areas (i.e. non-agricultural use). Workers who apply herbicides shall have all appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use.
2. Herbicides shall be mixed and applied in conformance with the manufacturer's directions.
3. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife.
4. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed; and herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water.
5. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.
6. A written record of all herbicide applications on site, including dates and amounts, shall be furnished to the California State Lands Commission on a monthly basis.

MM 3.9-5b: Notify California Department of Conservation, Division of Oil, Gas, and Geothermal Resources. The project proponent shall comply with the following:

1. In the event any abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, all work shall cease in the vicinity of the well, and the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, shall be contacted for requirements and approval; copies of said approvals shall be submitted to the Kern County Planning and Natural Resources Department.

2. The California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, may determine that remedial plugging operations may be required and shall be contacted and brought to the generation tie-line site to make a proper assessment of the suspect materials.

MM 3.9-6b: Asbestos-containing Material. The project proponent shall comply with the following:

1. In the event that suspect asbestos-containing materials are uncovered during project construction, work within the vicinity of the discovery shall immediately halt and a certified asbestos hazardous materials professional shall be contacted and brought to the generation tie-line site to make a proper assessment of the suspect materials.
2. All potentially friable asbestos containing materials shall be removed in accordance with Federal, State, and local laws and the National Emissions Standards for Hazardous Air Pollutants guidelines prior to ground disturbance that may disturb such materials.
3. All demolition activities shall be undertaken in accordance with California Occupational Safety and Health Administration standards, as contained in Title 8 of the California Code of Regulations, Section 1529, to protect workers from exposure to asbestos. Materials containing more than one percent asbestos shall also be subject to Eastern Kern Air Pollution Control District's (EKAPCD) regulations. Demolition shall be performed in conformance with Federal, state, and local laws and regulations so that construction workers and/or the public avoid significant exposure to asbestos-containing materials.

MM 3.9-7b: Environmental Contamination Avoidance. If the generation tie line crosses contaminated soils or remedial equipment on the properties that have been land-use restricted by the California Department of Toxic Substances Control, a health and safety plan must be prepared to ensure that any construction workers, nearby residents or other sensitive receptors are protected from any contaminants that may become airborne during soil disturbance. Additionally, the caps installed to contain the contaminated soil cannot be punctured.

MM 3.9-8b: Fire Safety Plan. Prior to the issuance of grading or building permits, the project proponent shall develop and implement a fire safety plan for use during construction, operation, and decommissioning. The project proponent shall submit the plan, along with maps of the project generation tie-line sites and access roads, to the Kern County Fire Department for review and approval. The fire safety plan shall contain notification procedures and emergency fire precautions including, but not limited to the following:

1. All internal combustion engines, both stationary and mobile, shall be equipped with spark arresters. Spark arresters will be in good working order.
2. Light trucks and cars with factory-installed (type) mufflers will be used only on roads where the roadway is cleared of vegetation. These vehicle types will maintain their factory-installed (type) muffler in good condition.
3. Fire rules will be posted on the project bulletin board at the contractor's field office and areas visible to employees.
4. Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials.

5. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires to prevent them from growing into more serious threats.
6. The project proponent shall make an effort to restrict the use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to periods outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.

3.9.6 Residual Impacts after Mitigation

Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-2a, MM 3.9-2b, MM 3.9-3a, MM 3.9-3b, MM 3.9-4a, MM 3.9-4b, MM 3.9-5a, MM 3.9-5b, MM 3.9-6a, MM 3.9-6b, MM 3.9-7b, and MM 3.9-8b would substantially reduce potential impacts associated with the use, storage, or handling of hazardous substances or the existence of other hazardous conditions at the project site by requiring implementation of preventative measures and precautions. These measures also require that necessary licenses and permits be obtained and those hazardous substances only be handled and used by properly trained and certified personnel.

Although unlikely, following implementation of the mitigation measures, it is possible that an accidental hazardous material release could occur and cause a safety risk to the human environment. No other residual impacts are expected to occur as a result of construction, operation and maintenance, and/or decommissioning of the proposed project or as a result of an alternative.

3.10 Infrastructure

3.10.1 Affected Environment

This section of the EIS/EIR describes the affected environment for infrastructure in the proposed project area, including the regulatory and environmental settings.

3.10.1.1 Scoping Issues Addressed

The following public comments related to infrastructure were received and are addressed in this section:

- Direct impacts of waste generation from construction and operation should be included in the EIS/EIR.
- The method of water supply and sewage disposal for the project requires approval by the Kern County Environmental Health Division.

3.10.1.2 Regulatory Framework

Federal

There are no federal regulations related to infrastructure that apply to the proposed project or alternatives.

State

The primary responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs). The SWRCB sets statewide policy for the implementation of state and federal laws and regulations. The RWQCBs adopt and implement Basin Plans that recognize regional differences in natural water quality, actual and potential beneficial uses, and water quality problems associated with human activities. The project sites are within the jurisdiction of the Lahontan Region.

SWRCB Resolution No. 2012-0032 is the Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS) establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS and replacements and sets the level of performance and protection expected from OWTS in order to avoid water quality degradation and protect public health..

The California Public Utilities Commission regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. It is tasked with ensuring that safe, reliable utility service is available to consumers, setting retail energy rates, and protecting against fraud.

The California Department of Resources Recycling and Recovery (CalRecycle) is the state agency designated to oversee, manage, and track the 76 million tons of waste generated in California each year. CalRecycle works jointly with local government to implement regulations and fund programs.

The Integrated Waste Management Act of 1989 (Public Resources Code [PRC] 40050 et seq. or Assembly Bill [AB] 939, codified in PRC 40000), administered by CalRecycle, requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills.

Pursuant to the California Integrated Solid Waste Management Act of 1989, all cities in California are required to reduce the amount of solid waste disposed in landfills. Assembly Bill (AB) 939 required a reduction of 25 percent by 1995 and 50 percent by 2000. Contracts that include work that will generate solid waste, including construction and demolition debris, have been targeted for participation in source-reduction, reuse, and recycling programs. The developer is urged to manage solid waste generated by the work to divert waste from disposal in landfills (particularly Class III landfills) and maximize source reduction, reuse, and recycling of construction and demolition debris.

The State has come a long way since the passage of the AB 939; state diversion rates are now equivalent to 65 percent, the statewide recycling rate is 50 percent, and the beverage container recycling rate is 80 percent. With the passage of AB 341 (Chesbro, Chapter 476, Statutes of 2011), the Governor and the Legislature established a policy goal for the State that a minimum of 75 percent of solid waste must be reduced, recycled, or composted by the year 2020. The State provided the following strategies to achieve that 75 percent goal:

1. Moving organics out of the landfill
2. Expanding the recycling/manufacturing infrastructure
3. Exploring new approaches for state and local funding of sustainable waste management programs
4. Promoting state procurement of post-consumer recycled content products
5. Promoting extended producer responsibility

To achieve these strategies, the State recommended legislative and regulatory changes including mandatory organics recycling, solid waste facility inspections, and revising packaging. With regard to construction and demolition, the State recommended an expansion of the California Green Building Code standards that incentivize green building practices and increase diversion of recoverable construction and demolition materials. Current standards require 50 percent waste diversion on construction and some renovation projects, although this may be raised to 65 percent for nonresidential construction in upcoming changes to the standards. The State also recommended promotion of the recovery of construction and demolition materials suitable for reuse, compost, or anaerobic digestion before residual wastes are considered for energy recovery (CalRecycle, 2015).

As part of compliance with the State of California Green Building Code Requirements (CALGreen) that took effect beginning January 2011, the County implemented the following construction waste diversion requirements:

- Submittal of a Construction Waste Management Plan prior to project construction for approval by the Kern County Building Department

- Recycling and/or reuse of a minimum 50 percent of construction and demolition waste
- Recycling or reuse of 100 percent of tree stumps, rocks, and associated vegetation and soils resulting from land clearing (Kern County, 2016)

The California Solid Waste Reuse and Recycling Access Act identified a lack of adequate areas for collecting and loading recyclable materials, resulting in a significant impediment to diverting solid waste. This act requires state and local agencies to address access to solid waste for source reduction, recycling, and composting activities.

The California Department of Water Resources (DWR) is a department within the California Resources Agency responsible for the state of California's management and regulation of water usage.

California Water Code Section 10912 require preparation of a Water Supply Assessment for photovoltaic (PV) and wind energy projects that would occupy more than 40 acres of land. This law seeks to promote more collaborative planning among local water suppliers and cities and counties. It requires that water supply assessments occur early in the land use planning process for all large-scale development projects. It also requires an identification of existing water entitlements, rights, contracts, and a quantification of the prior year's water deliveries.

California Water Code Section 13260 requires any person who discharges waste, other than into a community sewer system, or proposes to discharge waste that could affect the quality of waters of the state to submit a report of waste discharge to the applicable RWQCB.

Mojave Public Utilities District (MPUD) provides water service to the Mojave community and to wind and solar projects in the vicinity of the proposed project. MPUD obtains its water supply from groundwater wells and from the Antelope Valley–Eastern Kern Water Agency (AVEK). MPUD has a groundwater well located approximately 0.25 miles south of the intersection of State Highway 58 Business and Lone Butte Road, approximately 7 miles northeast of the project sites (Appendix B20).

As proposed, water would be provided by the MPUD, which has indicated that it is prepared to provide water for the proposed project.

Title 8, Section 1541, of the California Code of Regulations requires excavators to determine the approximate locations of subsurface installations such as sewer, telephone, fuel, electric, and water lines prior to opening an excavation.

The California Government Code (Sections 4216 et seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center. Underground Services Alert of Northern California (known as USA North) receives planned excavation reports from public and private excavators and transmits those reports to all participating members of USA North that may have underground facilities at the location of excavation. Kern County is a participating member of USA North (Underground Service Alert, 2018).

Local

The Kern County National Pollutant Discharge Elimination System (NPDES) Applicability form determines which water quality protection measure requirements apply to different projects (if any). Should stormwater runoff be contained onsite and not discharge to any waters, no special action is required. Should stormwater runoff discharge into waters of the United States compliance with SWRCB Construction General Permit requirements, including development of a Storm Water Pollution Prevention Plan (SWPPP) and its associated best management practices (BMPs) is required. Should stormwater runoff not be contained onsite but also not discharge to waters of the United States, implementation of requirements similar to those of the Construction General Permit is still required. With respect to the project, no waters of the United States are present on site in order to comply with the water quality objectives and standards contained in the Water Quality Control Plan for the Lahontan Region.

The public facilities and services, resources, and energy elements of the Kern County General Plan establish the goals, policies, and implementation measures related to hazardous materials and safety that are applicable to the project. The Public Facilities and Services element requires new development to pay its proportional share of the local costs of infrastructure improvements required to service such development and provide availability of public utility services, determine the need for fire protection services prior to approval of projects, and involve utility providers in the land use and zoning review process.

The Resources element requires that the County encourages safe and orderly energy development within the county, encourages development of alternative energy sources by tailoring its Zoning and Subdivision Ordinances and building standards to reflect Alternative Energy Guidelines published by the California State Energy Commission. It also requires that the development of resource areas minimizes effects on neighboring lands.

The General Provisions Element requires all new development projects to be subject to the Standards for Sewage, Water Supply, and Preservation of Environmental Health Rules and Regulations, administered by the Environmental Health Services Department.

The Energy Element encourages safe and orderly commercial solar development, and encourages solar projects to conserve fossil fuels and improve air quality. It also encourages solar development in the desert and valley regions previously disturbed and discourages the development of energy projects on undisturbed land supporting state or federally protected plant and wildlife species. The Energy Element encourages safe and orderly development of transmission lines which minimize potential adverse environmental effects. The Energy Element requires the County to review all proposed transmission lines and their alignments for conformity with the Land Use, Conservation, and Open Space Element of the General Plan, and to work with other agencies in establishing routes for proposed transmission lines. Lastly, the Energy Element encourages the County to monitor the supply and demand of electrical transmission capacity locally and statewide.

The Kern County General Plan provides goals and policies for the design features of development projects in order to reduce impacts of such projects. The policies and implementation measures in the Kern County General Plan for infrastructure that are applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

1.4 Public Facilities and Services

Policies

Policy 1: New discretionary development will be required to pay its proportional share of the local costs of infrastructure improvements required to service such development.

1.10 General Provisions

Goal

Goal 1: Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving viable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

1.10.1 Public Services and Facilities

Policies

Policy 9: New development should pay its pro rata share of the local cost of expansions in services, facilities, and infrastructure that it generates and upon which it is dependent.

Policy 15: Prior to approval of any discretionary permit, the County shall make the finding, based on information provided by the California Environmental Quality Act (CEQA) documents, staff analysis, and the applicant, that adequate public or private services and resources are available to serve the proposed development.

Policy 16: The developer shall assume full responsibility for costs incurred in service extension or improvements that are required to ensure the project. Cost sharing or other forms of recovery shall be available when the service extensions or improvements have a specific quantifiable regional significance.

The Mojave Specific Plan's Land Use Element requires that future electricity demand for projects for the Mojave area account for increases proposed in the Specific Plan, and work with Southern California Edison (SCE) to modify and improve the electric power delivery system as the area grows.

The West Edwards Road Settlement Specific Plan requires that development utilize existing utility purveyors, and to pay its proportional share of the costs of local infrastructure improvements. According to this plan, undergrounding of all new utilities and/or distribution lines, and a fiscal impact analysis, is required.

The Willow Springs Specific Plan requires flood control channels and debris basins to be designed and constructed prior to the issuance of building permits in order to reduce or eliminate the potential for flooding and/or debris/mudflows to affect future developments. The Specific Plan also requires new development to pay its proportional share of local costs of infrastructure improvements required to service such development.

3.10.1.3 Environmental Setting

Water Supply

The project site is located within Edwards Air Force Base (AFB) and the unincorporated community of Mojave in Kern County. The project site is located within the boundaries of AVEK and the Rosamond Community Services District (RCSD). AVEK distributes up to 144,844 acre-feet per year (AFY) of imported wholesale water from the State Water Project throughout its jurisdiction (AVEK, 2016). AVEK provides water directly to customers within its service area and also distributes water to several water purveyors, including RCSD, which provides water within an approximately 31-square-mile service area adjacent to the western boundary of Edwards AFB. RCSD's water sources include a combination of surface water imported by AVEK and groundwater drawn from local wells (RCSD, 2014). RCSD currently serves approximately 5,000 households and businesses with a total demand of approximately 3,700 AFY (RCSD, 2018).

The primary sources of water supply on Edwards AFB include groundwater drawn from local wells and imported surface water purchased from AVEK. Average water demand on-base can normally be supplied by imported water from AVEK. Groundwater is used to supplement AVEK supplies in order to meet increased demand during summer months.

The solar facility site is currently undeveloped and does not contain onsite wells or any other water supply infrastructure. The majority of the proposed gen-tie line route options would follow areas with a variety of land uses, including existing roads, wind energy generating facilities, a historic railroad, modern transmission lines, existing residences, and agricultural/industrial uses.

Stormwater Drainage

The project area is underlain by the Gloster Subbasin within the Antelope Valley Hydrologic Unit of the South Lahontan Hydrologic Region. The South Lahontan Hydrologic Region abuts the eastern slope of the Sierra Nevada, and spring runoff from melting snowpack provides the majority of the region's surface water. The South Lahontan Hydrologic Region encompasses a total of 26,732 square miles (16.9 percent of California), and occupies portions of Mono, Inyo, Kern, San Bernardino, and Los Angeles Counties.

The project site consists of undeveloped, relatively flat desert land with vegetation typical of the Mojave area. The local hydrology is characterized by ephemeral stream channels and washes

conveying surface runoff in a northwest to southeast direction, generally from the foothills of the Tehachapi Mountains toward the Rosamond and Rogers dry lakes on Edwards AFB. Hydrologic patterns within the project site are muted as a result of the low relief and arid nature of the region. Several ephemeral drainage areas occur within the project site, but are generally poorly defined and exhibit sandy substrate and minimal changes from surrounding vegetation. The project site is located in an enclosed hydrologic subbasin, in which no surface drainage reaches the ocean. Instead, surface flows are eventually lost to percolation and evaporation. Adjacent areas are, for the most part, undeveloped and do not have any existing stormwater drainage infrastructure. However, the typically low precipitation levels in the area coupled with the topography and the pervious soil covered sites results in minimal offsite drainage.

Wastewater

Wastewater generated on Edwards AFB is treated by one of two onsite wastewater treatment plants. There is no existing wastewater infrastructure or generation on the project site.

Solid Waste

California state law regulates the types of solid waste that can be disposed of at the different classes of landfills. Class I landfills may accept hazardous and nonhazardous wastes. Class II landfills may accept designated and nonhazardous wastes, and Class III landfills may accept nonhazardous wastes (refer to the following section for a description of appropriate disposal methods of waste generated at the project sites).

Kern County is responsible for meeting the California Integrated Waste Management Act of 1989 (AB 939). AB 939 required cities and counties to reduce the amount of solid waste being sent to landfills by 50 percent by January 1, 2000. It also required cities and counties to prepare solid waste planning documents. These documents include the Source Reduction and Recycling Element, the Household Hazardous Waste Element, and the Nondisposal Facility Element. All three of these documents, as well as the Integrated Waste Management Plan, approved February 1998 by the California Integrated Waste Management Board, have been approved for Kern County. The Kern County Integrated Waste Management Plan is the long-range planning document for landfill facilities.

Construction and demolition waste is heavy, inert material. This material creates significant problems when disposed of in landfills. Because construction and demolition waste is heavier than paper and plastic, it is more difficult for counties and cities to reduce the tonnage of disposed waste. For this reason, construction and demolition waste has been specifically targeted by the state of California for diversion from the waste stream. Projects that generate construction and demolition waste should emphasize deconstruction and diversion planning rather than demolition. Deconstruction is the planned, organized dismantling of a prior construction project, which allows maximum use of the deconstructed materials for recycling in other construction projects and sends a minimum amount of the deconstruction material to landfills.

The Kern County Waste Management Department administers or sponsors the following recycling programs, which contribute toward meeting state-mandated solid waste diversion goals:

- Recycling programs at landfills to recycle or divert a wide variety of products, such as wood waste, cathode ray tubes, tires, inert materials, appliances, etc.
- Drop-off recycling centers for household recyclables. The County- and the City-operated drop-off recycling centers, which are located in the unincorporated metropolitan area and the city, may be used by both county and city residents.
- Financial assistance for operation of the city of Bakersfield Green Waste Facility.
- The Kern County Special Waste Facility for the disposal of household hazardous waste. Services are provided to all Kern County residents.
- Semi-annual "bulky waste" collection events, which are held in the Bakersfield area and available to both county and city residents (co-sponsor).
- Christmas tree recycling campaign (participates jointly with the city of Bakersfield).
- Telephone book recycling program (co-sponsors with Community Clean Sweep).
- Community Clean Sweep summer workshops called "Trash to Treasure," which educate children about recycling and other Kern County Waste Management Department programs (sponsor).
- An innovative elementary school program called the "Clean Kids Hit the Road Puppet Show" (operates in collaboration with Community Clean Sweep).
- Recycling trailers for churches, schools, and nonprofit organizations.

Landfills

The Kern County Waste Management Department operates seven landfills throughout the county. Landfills are located in Bakersfield, Boron, Mojave-Rosamond, Ridgecrest, Shafter-Wasco, Taft, and Tehachapi (Kern County Waste Management, 2017). The project would be served primarily by Mojave-Rosamond Landfill, which is located at 400 Silver Queen Road in Mojave, 2 miles north of the project site. This Class III landfill accepts construction and demolition wastes, green materials, inert metals, and mixed municipal waste. The Mojave-Rosamond Landfill daily maximum capacity is 3,000 tons per day. The closure date for this landfill is in the year 2123 (CalRecycle, 2015a; Kern County Waste Management, 2012). This project was approved by the Kern County Board of Supervisors on October 2, 2012 (Kern County Board of Supervisors, 2012). The Lebec Transfer Station, located 19 miles west of the project site at 300 Landfill Road in Lebec, replaced the Lebec Sanitary Landfill, which ceased operation in 2001. The Lebec Transfer Station has a maximum throughput of 99 tons per day, and a permitted capacity of 25,540 tons per year. Landfill and transfer station locations, capacity, and anticipated closure dates are presented in **Table 3.10-1**.

TABLE 3.10-1
SUMMARY OF KERN COUNTY WASTE MANAGEMENT LANDFILLS AND TRANSFER STATION

Landfill	Permit Capacity (cubic yards)	Remaining Capacity (cubic yards)	Maximum Capacity (tons/day)	Ceased Operation Date
Mojave-Rosamond 400 Silver Queen Rd. Mojave	78,000,000	76,310,297	3,000	2123
	Permitted Throughput (tons/day)	**Permitted Capacity (tons/year)**	**Total Acreage**	**Ceased Operation Date**
Lebec Transfer Station 300 Landfill Rd. Lebec	99	25,540	5.6	N/A

SOURCE: CalRecycle, 2015a; CalRecycle, 2015b.

Electricity

SCE provides electrical supply to Edwards AFB and southeastern Kern County.

Natural Gas

Southern California Gas Company is the natural gas provider in southeastern Kern County and Pacific Gas & Electric provides natural gas for Edwards AFB; however, there is no natural gas service for the project site. Natural gas would not be required during construction, operation, or decommissioning of the project. Therefore, the project would not place any demand on existing natural gas systems.

3.10.2 Environmental Consequences

This section describes the environmental consequences relating to infrastructure for the proposed project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.10.2.1 Assessment Methods/Methodology

Current data obtained from the Edwards AFB, County, and State of California about the capacity of water suppliers, sewage, and landfills were used to identify potential impacts. The evaluation of project impacts is based on professional judgment, analysis of the County policies, and significance criteria established in Appendix G of the CEQA Guidelines, which the County has determined appropriate for the EIS/EIR.

3.10.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact is significant related to infrastructure if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice. A project could have a have a significant adverse effect on infrastructure if it would:

- Exceed wastewater treatment requirements of the applicable regional water quality control board.
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require new or expanded water supply entitlements.
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition the provider's existing commitments.
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Fail to comply with federal, state, and local statutes and regulations related to solid waste.

The lead agency determined in the NOP that the following environmental issue area would result in no impacts or less-than-significant impacts and were therefore scoped out of requiring further review. Appendix A1 of this EIS/EIR contains a copy of the NOP and additional information regarding these issue areas.

- Result in a determination by the wastewater treatment provider that serves or may serve the proposed project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

3.10.3 Analysis of Environmental Effects

3.10.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Utilities that could potentially be affected by the proposed project include water and sewer infrastructure.

Construction

The 2-year project construction period is estimated to require up to 200 AFY of water to support concrete manufacturing, dust control, and sanitation. Wastewater comprised primarily from sanitary waste generated during project construction is typically contained within portable toilet facilities. Wastewater generated by the proposed project would be contained within portable toilet facilities that would be provided and routinely emptied by a County-registered and permitted

portable toilet rental and sewage pumping business. No sewage or disposal connections to the Edwards AFB sewer system or a municipal sewer system are anticipated. Therefore, the proposed project would not affect existing sewer systems.

As described in this section, there are no electrical, natural gas, potable water connections, or other utility lines located within the proposed project site on Edwards AFB; therefore, construction of a solar facility would not affect existing utility lines.

Solid waste generated from construction activities may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation wastes. These wastes would be segregated, where practical, for recycling. Non-recyclable wastes would be placed in covered dumpsters and removed on a regular basis by a certified waste handling contractor for disposal at a Class III landfill. Vegetation wastes generated by site clearing and grubbing would be chipped/mulched and spread onsite or hauled offsite to an appropriate green waste facility.

The closest landfill to the project site that would accept construction/demolition solid waste is the Mojave-Rosamond Sanitary Landfill. The Mojave-Rosamond Sanitary Landfill is located approximately 2 miles from the site and is expected to remain in operation through 2123. Given this timeframe, this landfill is expected to be in operation during the construction period of the proposed project. Further, with the implementation of Mitigation Measure MM 3.10-2a for the solar facility portion of the project site and Mitigation Measure MM 3.10-2b for the gen-tie portion of the project, a recycling coordinator would ensure the separation and proper disposal of recyclable materials and solid waste in accordance with the California Integrated Waste Management Act thereby reducing the potential impact of construction activities on utilities in the project vicinity.

As described in Chapter 2, *Project Description*, the proposed gen-tie route options would traverse undeveloped lands as well as existing roadways and developed areas. Therefore, the potential exists that utility lines might be inadvertently damaged by construction of the gen-tie line. However, the construction contractor is required by state law to determine the approximate locations of subsurface utilities prior to opening an excavation. In compliance with this regulation, the construction contractor would be required to contact USA North at least two working days prior to initiation of ground-disturbing construction activities. USA North would notify the utility providers in the vicinity of the planned excavations. Each provider would be responsible for marking the location of its underground utilities and coordinating with the contractor to avoid damage. In addition, implementation of Mitigation MM 3.10-1a for the solar facility portion of the project site and Mitigation Measure MM 3.10-1b for the gen-tie portion of the project, would require advance coordination with utility providers for protection of subsurface utilities, protection for utilities during construction, and notification to Fire Departments and utility providers regarding any damage to utilities. With implementation of this measure, the potential for utility line rupture would be low. Therefore, implementation of Mitigation Measures MM 3.10-1a and MM 3.10-1b and Mitigation Measures 3.10-2a, would reduce the potential that construction of the project would adversely affect existing utilities in the project area.

Operation and Maintenance

Water for operation of the solar facility would consist primarily of water consumed by panel washing processes and small quantities used for dust mitigation. Water is anticipated to be trucked to the project site for operations, with 30 AFY provided by Mojave Public Utility District. The developer would be responsible for purchasing and providing water for the project.

The total amount of staff required for operation and maintenance of the solar facility is expected to be up to 10 full-time personnel for operation, maintenance, and security of the solar facility.

As described in Chapter 2, *Project Description*, sanitary waste would be handled via onsite septic systems for services buildings and warehouses. A septic tank and leach field would be constructed to dispose of sanitary wastewater generated by full-time staff and service personnel. As described in Section 3.16, *Hydrology and Water Quality*, implementation of a SWPPP would be required during both construction and decommissioning per Mitigation Measure MM 3.16-1a for the solar facility portion of the project site and Mitigation Measure MM 3.16-1b for the gen-tie portion of the project, which would include erosion and sediment control BMPs, such as vegetation preservation and sandbags, which would prevent the occurrence of erosion or siltation onsite. Non-stormwater and post-construction BMPs would also be implemented to prevent discharge of construction-related pollutants (sediment, oil, etc.) that could contaminate nearby drainages. Stormwater runoff would be collected via an onsite drainage system that has not yet been designed and panel washdown water would be discharged to grade.

SCE provides electrical service to Edwards AFB and southeastern Kern County. The proposed project would construct a solar facility that would produce more than 100 MW of electricity that would be delivered to SCE's Windhub substation and/or the privately owned Westwind Substation. Therefore, the project would not place additional demands on existing electrical infrastructure. More information and analysis regarding energy demand, consumption, and existing infrastructure can be found in Chapter 5, *Consequences of Project Implementation*.

The project would produce relatively small amounts of waste associated with operation and maintenance activities. PV solar system wastes typically include broken and rusted metal, defective or malfunctioning modules, electrical materials, and empty containers and other miscellaneous solid materials. Most of these materials would be collected and delivered back to the manufacturer for recycling. Small amounts of typical household refuse would be generated by workers during operation and maintenance visits. As previously described, the existing landfill has an adequate capacity, and the recycling of decommissioned materials would further reduce the waste stream. Post-construction operational solid wastes would be disposed of at the Mojave-Rosamond Landfill. The Mojave-Rosamond expansion project was approved in 2012, and operational solid waste is expected to be disposed of at the Mojave-Rosamond Landfill for the duration of the project's operational lifespan. With the implementation of Mitigation Measure MM 3.10-2a for the solar facility portion of the project site and Mitigation Measure MM 3.10-2b for the gen-tie portion of the project, a recycling coordinator would ensure the separation and proper disposal of recyclable materials and solid waste in accordance with the California Integrated Waste Management Act, thereby reducing the potential impact of operational activities on utilities in the project vicinity.

As described in Section 3.7, *Geology, Minerals, and Soils*, if the proposed septic tank(s) and leach field(s) would be located on the EUL and would be required to comply with applicable regulations for the siting and installation of such systems, as enforced by the Air Force. As part of compliance with Mitigation Measure MM 3.7-2a for the solar facility portion of the project site (see Section 3.7, *Geology, Minerals, and Soils*), the proposed septic systems would be properly sited and designed such that the septic systems would minimize potential degradation of water quality. Therefore, the proposed project would not adversely affect sewer or wastewater treatment.

Decommissioning

It is assumed that project decommissioning would have similar effects related to infrastructure as project construction. The decommissioning process may result in larger volumes of waste that require disposal; however, the recycling coordination required in Mitigation Measure MM 3.10-2a for the solar facility portion of the project site and Mitigation Measure MM 3.10-2b for the gen-tie portion of the project, would help reduce solid waste impacts. In addition, implementation of Mitigation Measure MM 3.11-1a for the solar facility portion of the project and Mitigation Measure 3.11-1b for the gen-tie portion of the project, further discussed in Chapter 3-11, *Land Use*, would ensure that prior to issuance of any building permit, the project developer provides the Kern County Planning and Planning and Natural Resources Department with a Decommission Financial Plan for review and approval to be carried out at a cost to be borne by the project developer. The Decommission Financial Plan would factor in the cost to remove and dispose of the solar panels and support structures, replacement of any disturbed soil from removal of support structures, and control of fugitive dust on the remaining undeveloped land. Therefore, with implementation of Mitigation Measures MM 3.10-2a, MM 3.10-1b, MM 3.11-1a, and MM 3.11-1b, the potential for the project's decommissioning to adversely affect existing utilities in the project area would be reduced to a less-than-significant level.

CEQA: Impact Significance Determination

Impact 3.10-1: The project would exceed wastewater treatment requirements of the applicable regional water quality control board.

Construction

Wastewater generated during construction is expected to be primarily comprised of sanitary waste, which is typically managed through the utilization of portable toilet facilities and disposed of at an approved disposal site. Wastewater generated by the proposed project would be handled by the construction contractor, and would likely be contained within portable toilet facilities that would be provided, and would be routinely emptied. No sewage or disposal connections to the Edwards AFB sewer system or a municipal sewer system would be implemented, and impacts would be less than significant.

Operation

Wastewater generated during operation would include sanitary waste, stormwater runoff, and panel washdown water. As described in Chapter 2, *Project Description*, sanitary waste would be handled via onsite septic systems for the services buildings and warehouses. Stormwater runoff would be collected via an onsite drainage system and panel washdown water would be discharged to grade.

More specific information regarding the potential impacts of project operation on drainage patterns is presented in Section 3.17, *Water Resources*.

As described in this section and in Section 3.7, *Geology, Minerals and Soils*, any septic tank(s) and leach field(s) constructed would be required to comply with the Construction Notice to Proceed as part of the Site Development Lease. The proposed septic system would require implementation of all required conditions regarding the design and siting of the septic system and leach field as specified by Air Force requirements. When designed correctly, septic systems would not result in health impacts, adversely affect natural habitat, or pollute groundwater. Therefore, impacts related to wastewater treatment would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.10-1a and MM 3.10-1b (see Section 3.10.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.10-2: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

As summarized above, the minimal amount of wastewater generated onsite during construction, operation, and decommissioning would be contained by portable toilets and appropriately disposed of offsite at a treatment facility. Wastewater generated would include sanitary waste handled via onsite septic systems, stormwater runoff, and panel washdown water. Specifically, sanitary waste would be handled via onsite septic systems for the services buildings and warehouses. The project site would not be connected to any Edwards AFB sewer system, municipal sewer system, or County-owned wastewater conveyance facilities. Thus, the construction of new or expansion of existing wastewater treatment facilities would not be required to meet the demands of the proposed project.

It is anticipated that MPUD will provide water for the proposed project through purchase of treated water from local wholesaler AVEK or through treated groundwater from wells located within MPUD's service area (both of which may be accessed through the same construction water service hydrant) and/or untreated groundwater from MPUD's non-potable Well 30. Therefore, impacts related to construction and operation of water delivery systems would be less than significant.

No existing telecommunication facilities are located onsite. During construction, cellular or satellite communication technology may be used for both internet and telephone systems, which would not require construction of new telecommunication facilities.

The project would require telecommunications facilities to meet the communication requirements for interconnecting to the power grid and to support project operations during monitoring. Fiber optic communication lines would follow the electrical collector system. Because construction of the fiber optic communication lines would follow the electrical collector system and land line

systems would also follow the electrical collector system, relocation of telecommunication facilities would not be required. The construction of new telecommunication facilities would occur on vacant land. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.10-3: Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Construction

The pattern and concentration of runoff could be altered by project activities, such as grading of the site and roads. However, due to the existing flat topography of the project site, grading and installation of impervious surfaces for roads, support structures, and the substation are anticipated to be minimal.

As described in Chapter 2, *Project Description*, construction of the proposed project would commence after the development of a SWPPP that incorporates erosion control, sediment control, waste management, non-stormwater management, and post-construction BMPs to prevent surface water quality degradation from construction activities. Site-specific BMPs would be designed by the developer in compliance with regulations and permit conditions. More specific information regarding the potential impacts of project construction on drainage patterns can be found in Section 3.16, *Hydrology and Water Quality*.

It is not anticipated that the amount of runoff generated on the project site during construction would be substantially altered; therefore, project construction is not anticipated to result in the need for new stormwater drainage facilities.

Operation

The proposed project would create a small amount of additional impervious surfaces from the proposed solar structures, warehouse and administrative buildings, and would require water usage for panel washing, a small amount for dust mitigation, and to accommodate onsite workers during operations. Because the site is relatively flat and would continue to be generally covered by pervious surfaces, runoff generated from the project site during operation is expected to be minimal. Nevertheless, retention basins are typically constructed onsite to capture the predicted increase in runoff from the proposed project.

Runoff would be released at a location and rate similar to existing conditions. The construction of retention basins is expected to be of relatively short duration; the retention basins would not generally be connected to any existing infrastructure and would therefore affect the operation of any existing infrastructure. Furthermore, in compliance with Mitigation Measure MM 3.10-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.10-1b for the gen-tie

portion of the project, the location of existing utilities would be determined and would be incorporated into construction specifications to reduce service interruptions during construction of the project facilities. Environmental effects associated with the construction of possible retention basins would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.10-1a and MM 3.10-1b (see Section 3.10.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.10-4: The project has sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlement is not needed.

Construction

It is estimated that up to 200 AFY of water would be required during the 2-year construction period to support concrete manufacturing, dust control, and sanitation. Edwards AFB would not provide water for the project. The project developer intends to purchase water for construction, operation, and decommissioning from the Mojave Public Utility District (MPUD) and truck this water to the project site. Mojave PUD has provided a will-serve letter verifying there is sufficient water available to provide the proposed project's construction water supply (Dudek, 2018).

Operation

Operation of the project may potentially use up to 30 AFY of water. Operational decisions regarding panel washing would be made based upon real-time conditions and there may be years in which no washing is required. As the water demand would not exceed 75 AFY, the project would not require preparation of a water supply assessment to determine available water supplies. The trucked water would be provided by the Mojave Public Utility District (PUD), which obtains its water supply from the Fremont Valley groundwater basin. The basin is not currently overdrafted, and the Mojave PUD has provided will-serve letters for operation water demands. Therefore, water demand during operation would not result in significant impacts to water supply or the expansion of current entitlements.

Mitigation Measures

No mitigation measures would be required.

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.10-5: Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.

Construction

As described previously, solid waste generated from construction activities would be segregated, where practical, for recycling. Non-recyclable wastes would be placed in covered dumpsters and

removed on a regular basis by a certified waste handling contractor for disposal at a Class III landfill. Vegetation wastes generated by site clearing and grubbing would be chipped/mulched and spread onsite or hauled offsite to an appropriate green waste facility.

The closest landfill to the project site that would accept construction/demolition solid waste is the Mojave-Rosamond Sanitary Landfill. The Mojave-Rosamond Sanitary Landfill is located approximately 2 miles from the site and is expected to remain in operation through 2123. Given this timeframe, this landfill is expected to be in operation during the construction period of the proposed project. With implementation of Mitigation Measure MM 3.10-2a for the solar facility portion of the project site and Mitigation Measure MM 3.10-2b for the gen-tie portion of the project, a recycling coordinator would ensure the separation and proper disposal of recyclable materials and solid waste in accordance with the California Integrated Waste Management Act. Therefore, the proposed project would not generate a significant amount of solid waste during construction that would exceed the permitted capacity of the local landfill. Impacts would be less than significant.

Operation

As described above, the project would produce relatively small amounts of waste associated with operation and maintenance activities. PV solar system wastes typically include broken and rusted metal, defective or malfunctioning modules, electrical materials, and empty containers and other miscellaneous solid materials. Most of these materials would be collected and delivered back to the manufacturer for recycling. Small amounts of typical household refuse would be generated by workers during operation and maintenance visits. As previously described, the existing landfill has an adequate capacity, and the recycling of decommissioned materials would further reduce the waste stream. Post-construction operational solid wastes would be disposed of at the Mojave-Rosamond Landfill. The Mojave-Rosamond expansion project was approved in 2012, and operational solid waste is expected to be disposed of at the Mojave-Rosamond Landfill for the duration of the project's operational lifespan. With the implementation of Mitigation Measure MM 3.10-2a for the solar facility portion of the project site and Mitigation Measure MM 3.10-2b for the gen-tie portion of the project, a recycling coordinator would ensure the separation and proper disposal of recyclable materials and solid waste in accordance with the California Integrated Waste Management Act. Therefore, the proposed project would not generate a significant amount of solid waste during operation and would not exceed the permitted capacity of the local landfill. Impacts would be less than significant.

Decommissioning

As discussed in Section 2.6.4, upon completion of the 35-year lease the project developer may seek to extend the EUL with the Air Force or decommission and remove the system and its components from the project site. The decommissioning process would result in larger volumes of waste that require disposal; however, the recycling coordination required in Mitigation Measure MM 3.10-2a for the solar facility portion of the project site and Mitigation Measure MM 3.10-2b for the gen-tie portion of the project would help reduce solid waste impacts. In addition, implementation of Mitigation Measures MM 3.11-1a and MM 3.11-1b, further discussed in Chapter 3-11, *Land Use*, would ensure that prior to issuance of any building permit, the project developer provides the Kern County Planning and Planning and Natural Resources Department with a Decommission Financial Plan for review and approval to be carried out at a cost to be borne by the project developer. The

Decommission Financial Plan would factor in the cost to remove and dispose the solar panels and support structures, replacement of any disturbed soil from removal of support structures, and control of fugitive dust on the remaining undeveloped land. Therefore, implementation of Mitigation Measures MM 3.10-2a, MM 3.10-2b, MM 3.11-1a, and MM 3.11-1b would reduce the potential that decommission of the project would adversely affect existing landfill in the project area to a less-than-significant level.

Mitigation Measures

Implement Mitigation Measures MM 3.10-2a, MM 3.10-2b (see Section 3.10.5 for mitigation measures), MM 3.11-1a, and MM 3.11-1b (see Section 3.11.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.10-6: Fail to comply with federal, state, and local statutes and regulations related to solid waste.

The proposed project is expected to generate solid waste during construction and operation. The 1989 California Integrated Waste Management Act (AB 939) requires Kern County to attain specific waste diversion goals. In addition, the California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the proposed project design. The proposed project would be required to comply with all federal, state, and local statutes and regulations related to the handling and disposal of solid waste. Therefore, implementation of the proposed project would result in less-than-significant impacts.

Mitigation Measures

No mitigation measures would be required.

Level of Significance after Mitigation

Impacts would be less than significant.

3.10.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Because of the reduced scale of Alternative B, less water would be used, less wastewater and less solid waste would be generated during construction. Impacts related to water, wastewater, and solid waste infrastructure would be reduced compared to Alternative A. Alternative B would utilize the same gen-tie line route proposed in Alternative A; therefore, impacts related to disruption of existing utilities would be similar to Alternative A.

Operation and Maintenance

Alternative B would result in the same effects to electricity and communications infrastructure as described for Alternative A, however, because of the reduced size of this alternative, effects related to water supply and generation of wastewater and solid waste would be reduced.

Decommissioning

As described previously under Construction, Alternative B would use less water and would generate less solid waste as well as wastewater during decommissioning activities and impacts related to water and wastewater infrastructure would be reduced compared to Alternative A.

CEQA: Impact Significance Determination

Because Alternative B would result in approximately one-third of the physical development of Alternative A, it is likely that this alternative would require less water and would generate less stormwater runoff, wastewater and solid waste during construction and operation. Therefore, Alternative B would result in fewer impacts compared to Alternative A. Impacts concerning compliance with wastewater treatment requirements, construction of wastewater and stormwater facilities, expansion of water supply entitlements, and disposal of solid waste would be less than significant with mitigation incorporated.

Mitigation Measures

Implement Mitigation Measures MM 3.10-1a, MM 3.10-1b, MM 3.10-2a, and MM 3.10-2b (see Section 3.10.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.10.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described previously. Therefore, there would be no need for new or expanded water supplies, and no generation of wastewater and no potential to affect existing utilities in the project area. Alternative C would result in no impacts regarding infrastructure.

CEQA: Impact Significance Determination

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described previously. Therefore, there would be no need for new or expanded water supplies, and no generation of wastewater or solid waste. Alternative C would result in no impacts concerning compliance with wastewater treatment requirements, construction of wastewater and stormwater facilities, expansion of water supply entitlements and disposal of solid waste.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No Impact.

3.10.4 Cumulative Impact Analysis

3.10.4.1 NEPA: Cumulative Environmental Effects and Their Significance

As described in Section 3.0, *Environmental Analysis*, and as shown in Table 3-1, "Cumulative Project List," 90 projects are proposed within Kern County, the city of Lancaster, the city of Palmdale, and unincorporated areas of Los Angeles in the vicinity of the project site. Fifty-four of these projects are solar projects. In addition, other related projects in the surrounding areas have been: (1) submitted for plan processing; (2) approved; and/or (3) engaged in active construction programs.

Impacts of the proposed project could be cumulatively considerable if they would have the potential to combine with similar impacts of other recent, present, or proposed projects to result in a significant cumulative effect. Similar to other solar projects, the proposed project would have a relatively high water demand during construction (estimated to be up to 400 acre-feet over a 2-year period). During operation, the proposed project is expected to have a substantially lower water demand of up to 40 AFY. Because of the area's remoteness and its limited available surface water resources, water supplies for other projects (especially remote renewable energy projects) are expected to be trucked in or obtained from wells onsite. Residential or commercial services, which are more water intensive uses, may connect to existing water suppliers. Significant cumulative impacts to utility systems would occur if the cumulative projects would overburden public service agencies and if utility providers were unable to provide adequate services. Some cumulative projects, including some of the 54 solar projects, have the potential to lower water demand if they replace more water-intensive uses such as agriculture. Prior to project approval, public agencies and utilities are given the opportunity to respond to an inquiry for information regarding potential increase in demand on their services. In accordance with California Water Code Section 10912 and Senate Bill 267, any renewable energy project with a water demand greater than 75 AFY would be required to prepare a water supply assessment to determine whether the water provider has enough supplies to support the project throughout its lifetime. Per Senate Bills 610 and 221, these water supply assessments would occur early in the land use planning process for all large-scale development projects. A water supply assessment is also required for commercial or residential developments meeting certain requirements. As noted in the Kern County General Plan, development fees are assessed on a project-specific basis to mitigate for the development-related increase in demand on public services and utilities.

As would most solar projects, the proposed project would generate a minimal volume of wastewater. The majority of projects within the vicinity of the project site are solar and wind energy projects that (similar to the proposed project) would not likely generate substantial volumes of wastewater. These projects would likely be served by portable toilet facilities provided by a County-registered and permitted portable toilet and waste disposal business that would dispose of wastewater at a municipal wastewater treatment facility (with which they have already secured a "will-serve" agreement). Any projects requiring septic systems would be required to comply with State and County requirements pertaining to septic system design, siting, and maintenance. For projects requiring wastewater treatment with the ability to hook in to a wastewater treatment

provider (mainly residential and commercial projects), wastewater utilities would be given the opportunity to respond to an inquiry for information regarding potential increase in demand on their services and to provide a confirmation of capacity to treat the proposed new volume of wastewater. The projects would be subject to payment of compensatory fees for any required infrastructure improvements associated with required utility connections. Therefore, the proposed project would not have the potential to combine with impacts from past, present, or reasonably foreseeable projects to result in a cumulative impact to wastewater treatment or infrastructure.

The proposed project is not expected to generate a substantial amount of stormwater runoff or to drain into an existing stormwater drainage system; existing onsite drainage patterns would be maintained to the maximum extent feasible through the avoidance of existing floodways as determined by the Drainage Plan (Mitigation Measure MM 3.16-3a for the solar facility portion of the project site and Mitigation Measure MM 3.16-3b for the gen-tie portion of the project). Any necessary drainage mitigation features, such as retention basins, that would capture any substantial predicted increase in runoff would be designed in compliance with the County Development Standards. In accordance with state requirements, the proposed project would also implement Mitigation Measure MM 3.10-1a for the solar facility portion of the project site and Mitigation Measure MM 3.10-1b for the gen-tie portion of the project, to ensure avoidance of utilities and potential utility service interruptions that could occur during project construction. The other 35 proposed solar projects in Kern County would also not likely generate substantial stormwater runoff nor connect to existing stormwater drainage systems. The other projects listed in Table 3-1 would be required to comply with state regulations requiring coordination with other service utility providers to avoid disruption of utility services caused by the project. All projects would be expected to implement BMPs (either through a SWPPP or other regulations), comply with their respective permit conditions, and properly install systems to manage stormwater runoff so that impacts would be less than significant. As there is no established downstream hydrological connection, runoff from the proposed project is not expected to combine with stormwater runoff from any other projects. Therefore, the proposed project would not have the potential to combine with impacts from past, present, or reasonably foreseeable projects to result in a cumulative impact to stormwater runoff.

The proposed project would generate a minimal amount of waste during construction and operation. Decommissioning of the proposed project may generate more waste; however, as part of Mitigation Measures MM 3.10-2a and MM 3.10-2b, recycling programs would be implemented for recycling of facility components during the project's construction, operation, and decommission. Furthermore, Mitigation Measures MM 3.11-1a and MM 3.11-1b would ensure the cost to remove and dispose of the project solid waste is accounted for in a Decommission Financial Plan that is reviewed and approved by Kern County prior to issuance of building permits. The proposed project is therefore not expected to significantly impact Kern County landfills. However, generation of waste from cumulative projects, including residential and commercial developments, and the decommissioning of other solar projects could result in a potentially significant cumulative impact. There are multiple active landfills within the area with large remaining capacities; recycling programs would be implemented for all projects in accordance with applicable state and local waste reduction regulations. Furthermore, similar to the proposed project, the projects surrounding the project area are typically required to complete a Decommission Financial Plan that accounts for the

costs of solid waste management prior to issuance of any building permits by Kern County. Therefore, the proposed project would not be expected to combine with impacts from past, present, or reasonably foreseeable projects to result in a cumulative impact to landfills.

In conclusion, the proposed project would be self-contained and would not result in significant impacts on infrastructure with implementation of Mitigation Measures MM 3.10-1a, MM 3.10-1b, MM 3.10-2a, MM 3.10-2b, MM 3.11-1a, MM 3.11-1b, MM 3.16-3a, and MM 3.16-3b.

3.10.4.2 CEQA: Cumulative Impact Significance Determination

With implementation of Mitigation Measures MM 3.10-1a, MM 3.10-1b, MM 3.10-2a, MM 3.10-2b, MM 3.11-1a, MM 3.11-1b, MM 3.16-3a, and MM 3.16-3b., the proposed project would not be expected to combine with impacts from past, present, or reasonably foreseeable projects to result in a significant cumulative impact involving wastewater treatment, infrastructure, stormwater runoff, or landfills.

Mitigation Measures

Implement Mitigation Measures MM 3.10-1a, MM 3.10-1b, MM 3.10-2a, MM 3.10-2b, MM 3.11-1a, MM 3.11-1b, MM 3.16-3a, and MM 3.16-3b (see Sections 3.10.5, 3.11.5 and 3.16.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be less than significant.

3.10.5 Mitigation Measures

3.10.5.1 Solar Facility Mitigation Measures

MM 3.10-1a: Coordinate with Utility Service Providers. Prior to construction, the developer shall coordinate with appropriate utility service providers and related agencies to determine the location of utilities and ensure that adequate wastewater treatments exist. The developer will also incorporate into construction specifications the requirement that the contractor develop a plan to reduce service interruptions. The plan shall be approved by the Air Force and submitted to appropriate utility providers. Utilities to be addressed in the plan shall include, but may not be limited to: water, recycled water, sewer, gas, electricity, telephone, and cable.

MM 3.10-2a: Recycling Coordinator. During construction, operation, and decommissioning, debris and waste generated shall be recycled to the extent feasible.

1. An onsite Recycling Coordinator shall be designated by the project proponent to facilitate recycling as part of the Maintenance, Recycling, and Trash Abatement and Pest Management Program.
2. The Recycling Coordinator shall facilitate recycling of all construction waste through coordination with contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes.
3. The onsite Recycling Coordinator shall also be responsible for ensuring wastes requiring special disposal are handled according to state and county regulations that are in effect at the time of disposal.

4. Contact information of the coordinator shall be provided to Kern County prior to issuance of building permits.

3.10.5.2 Gen-tie Mitigation Measures

MM 3.10-1b: **Coordinate with Utility Service Providers.** Prior to construction of generation tie-lines, the developer shall coordinate with appropriate utility service providers and related agencies to determine the location of utilities and ensure that adequate wastewater treatments exist. The developer will also incorporate into construction specifications the requirement that the contractor develop a plan to reduce service interruptions. The plan shall be approved by Kern County and submitted to appropriate utility providers. Utilities to be addressed in the plan shall include, but may not be limited to: water, recycled water, sewer, gas, electricity, telephone, cable.

MM 3.10-2b: Recycling Coordinator. During construction, operation, and decommissioning, debris and waste generated shall be recycled to the extent feasible.

1. An onsite Recycling Coordinator shall be designated by the project proponent to facilitate recycling as part of the Maintenance, Trash Abatement and Pest Management Program.
2. The Recycling Coordinator shall facilitate recycling of all generation tie-line construction waste through coordination with contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes.
3. The onsite Recycling Coordinator shall also be responsible for ensuring wastes requiring special disposal are handled according to state and county regulations that are in effect at the time of disposal.
4. Contact information of the coordinator shall be provided to the Kern County Planning and Natural Resources Department prior to issuance of building permits.

3.10.6 Residual Impacts after Mitigation

Mitigation Measures MM 3.10-1a for the solar facility portion of the project site and MM 3.10-1b for the gen-tie portion of the project, would determine the locations of exiting utilities through coordination with utility service providers and implement these locations into construction plans to avoid the potential for damage to occur to them during project construction. Mitigation Measure MM 3.10-2a for the solar facility portion of the project site, and Mitigation Measure MM 3.10-2b for the gen-tie portion of the project, would require waste generated by the project during construction and operation to be recycled to the extent feasible. Mitigation Measure MM 3.7-2a for the solar facility portion of the project would require compliance with state and county septic system standards. The proposed septic systems would be located an acceptable distance away from the high water marks of drainages onsite. Proper siting and design of the septic systems, as well as regular maintenance would minimize potential degradation of water quality. Mitigation measures would reduce impacts to infrastructure to less-than-significant levels. Implementation of the proposed project would not result in adverse impacts under NEPA. Residual impacts from the project to infrastructure after the implementation of mitigation are not expected to occur.

3.11 Land Use

3.11.1 Affected Environment

This EIS/EIR section describes the affected environment for land use in the proposed project area, including the regulatory and environmental settings. The following discussion addresses existing environmental conditions in the affected environment, evaluates the project's consistency with applicable goals and policies, identifies and analyzes environmental impacts, and recommends measures to reduce or avoid adverse impacts anticipated from project construction and operation.

3.11.1.1 Scoping Issues Addressed

The following comments related to land use were provided during scoping.

The U.S. Bureau of Land Management (BLM) provided the following comment:

- Consultation with BLM requested for the following locations:
    1. T. 11N., R. 32W. Sec. 32. SW1/4
    2. T. 10N., R. 11W. Sec. 10. NW1/4

The Initial Study/Notice of Preparation (NOP) presented three north-south transmission line options. The third option (North-South-Gen-Tie Route Option 3 as shown in Figure 2 of Initial Study/NOP) crossed parcels under BLM jurisdiction; however, the developer has since withdrawn option three. Therefore, the proposed project being analyzed in this EIS/EIR does not cross or affect any land administered by the BLM.

The Mojave Chamber of Commerce provided the following comment:

- The EIS/EIR should consider the potential project impacts for future development in Mojave when analyzing gen-tie route options.

An analysis of the proposed project's consistency with applicable Kern County General Plan and Specific Plan policies and objectives is provided in **Table 3.11-3**.

3.11.1.2 Regulatory Framework

Applicable goals, policies, and implementation measures for each resource analyzed have been identified in their respective Regulatory Setting section in Sections 3.1 through 3.16 of this EIR. This section lists all applicable goals, objectives, policies, and implementation measures adopted for the purpose of avoiding or mitigating an environmental effect not previously identified in the above-referenced chapter as they relate to land use planning and the project.

Federal

The Federal Aviation Administration (FAA) issues and enforces regulations related to air traffic control and the assignment and use of airspace. The FAA's regulations are found in the Federal Aviation Regulations (FAR). FAR Title 14, Part 77, establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (approximately 3.8 miles) of an airport.

The Edwards AFB Installation Development Plan (IDP) provides guidance for planning decisions regarding general land use growth patterns and site-specific development affecting the base. The Edwards AFB IDP describes the factors affecting interactions with surrounding lands, the capacity to accommodate development, and plans for the future of the base.

State

The California State Lands Commission

The California State Lands Commission's participation in the Desert Renewable Energy Conservation Plan (DRECP) and school land consolidation effort anticipates identifying renewable energy development opportunities and using the DRECP to prepare tiered CEQA and NEPA analysis for specific land exchange transactions and renewable energy projects on Commission land.

During project-specific review and approval, the Commission may be a lead or responsible agency under CEQA due to its authority to require a lease or permit for covered renewable energy project proposals that may be developed on school lands or sovereign lands. For this EIS/EIR, the Commission is not the responsible agency.

I. 1. 4. State Objectives

The California Energy Commission (CEC), California Department of Fish and Wildlife (CDFW), and the Commission identified three primary objectives the state must meet to achieve the fundamental purpose of the DRECP:

Objective 1: Reduce the biological and other environmental impacts of future utility-scale renewable energy developments in the Plan Area by designating appropriate areas for renewable energy development within the context of a landscape-scale conservation plan that are sufficient to accommodate the foreseeable demand for renewable energy in the DRECP through 2040.

Objective 2: Contribute to California's Renewables Portfolio Standard and the state's greenhouse gas reduction mandates and goals by planning for approximately 20,000 MWs of renewable energy generation and associated transmission capacity in the Plan Area by 2040, including obtaining state and federal incidental take authorizations with regulatory assurances needed for covered renewable energy and transmission projects.

Objective 3: Provide for the long-term conservation and management of Covered Species within the Plan Area and preserve, restore, and enhance natural communities and ecosystems in which those species are found by focusing renewable energy development away from areas of greatest biological importance or sensitivity; coordinating and standardizing biological avoidance, minimization, mitigation, compensation, conservation, and management requirements for Covered Activities within the Plan Area; and taking other actions to meet conservation planning requirements in state and federal law.

West Mojave Plan Habitat Conservation Plan

The West Mojave Habitat Conservation Plan (WMHCP) is a comprehensive environmental analysis of seven alternatives that address compliance with the federal and California endangered species acts (FESA and CESA, respectively). The primary purpose of the plan is to develop

management strategies for the desert tortoise, Mohave ground squirrel and over 100 other sensitive plants and animals that would conserve those species throughout the western Mojave Desert while simultaneously establishing a streamlined program for compliance with the regulatory requirements of FESA and CESA. The 9,359,070-acre planning area is located to the north of the Los Angeles metropolitan area, including 3,263,874 acres of BLM-administered lands, 3,029,230 acres of private lands and 102,168 acres of lands administered by the State of California. The plan establishes goals and standards for the conservation of sensitive species and streamlining Endangered Species Act permitting (BLM, 2005).

Local

Included in the Kern County General Plan is a Land Use Element, which designates the general distribution, location, and extent of desired land uses, including housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private uses; a Conservation Element, which addresses the conservation, development, and use of natural resources, including water, forests, soils, rivers, and mineral deposits; and an Open Space Element, which details measures for preserving open space for natural resources, outdoor recreation, public health, and safety. In addition to the Land Use, Open Space, and Conservation Elements, the Kern County General Plan includes other elements related to circulation, noise, safety, energy, and military readiness.

The Public Facilities and Services Element ensures that new developments pay their share of the costs required to meet public services needs and that utility developers are involved in the land use and zoning review process.

The Resource Element requires that the County support programs and policies that provide economic incentives to ensure the long-term retention of resource lands and to provide for the orderly expansion of new urban-scale infrastructure and development. The General Provisions Element contains several regulatory categories. The Archaeological, Paleontological, Cultural, and Historical Preservation sections require that the County promote the preservation of cultural and historic resources that constitute a heritage value to residents and visitors. The Threatened and Endangered Species section requires that the County work closely with state and federal agencies to ensure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources. The Surface Water and Groundwater section requires projects to analyze watershed impacts and mitigate for construction-related impacts. The Circulation Element requires that the County prevent encroachment on public airport and military base operations from incompatible land uses.

The Noise Element requires that discretionary industrial, commercial, or other noise-generating land use projects are reviewed for compatibility with nearby noise-sensitive land uses.

The Energy Element requires that the County permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards, and that the County review all proposed transmission lines and their alignments for conformity with the Land Use, Conservation, and Open Space Elements of the General Plan. Each Kern County General Plan element establishes goals, policies, and implementation measures that guide the planning decisions in unincorporated Kern County.

The Mojave Specific Plan was prepared to guide development within and surrounding the Mojave community until 2043. The Mojave Specific Plan states goals, objectives, policies, and implementation measures to accommodate growth while protecting the community's unique business, transportation, and environmental resources. The Land Use Element of the Mojave Specific Plan includes policies and objectives to ensure that a balanced land use pattern is used to ensure that future growth provides a range of residential, employment, service, and recreational opportunities. The Conservation, Circulation, Noise, and Seismic and Safety Elements provide additional goals and policies applicable to Land Use in the project area.

The South of Mojave Elephant Butte Specific Plan establishes recommendations and implementation measures addressing housing, business, industry, open space, recreation, circulation, and other land uses within the plan area. These recommendations and implementation measures include natural resource, scenic, and hazard land use policies.

The West Edwards Road Settlement Specific Plan contains recommendations and implementation measures addressing Land Use, Open Space and Conservation, Public Facilities and Services, and Resources.

The Willow Springs Specific Plan contains performance standards to supplement the zoning and land use map contained in the Kern County General Plan which specifies land use entitlements, as well as contains standards to guide the Specific Plan's implementation and to assist the legislative body in making decisions concerning issues in the community. The Specific Plan's goals, policies, and standards are compatible with those outlined in the Kern County General Plan, but are tailored to the particular needs of the Willow Springs planning area.

The Actis Interim Rural Community Plan has not yet been adopted for the community of Actis. The Actis Interim Rural Community Plan Map is in effect until a formal Specific Plan can be adopted for the community. Therefore, no formal plan has yet been adopted and the goals and policies of the Kern County General Plan shall be the governing tool for any development for portions of the project that pass through this area.

Title 19 of the Kern County Ordinance provides a description of permitted uses for the various zoning classifications within the County. The Zoning Ordinance explains the purpose of the district, specifies permitted and conditional uses, and establishes development and performance standards. In addition, Section 19.08.160 of the Kern County Zoning Ordinance establishes review requirements for the height of structures located within a military review zone as defined in Figure 19.08.160 of the Kern County Zoning Ordinance.

The Kern County Airport Land Use Compatibility Plan (ALUCP) establishes procedures and criteria by which the County can address compatibility issues when making planning decisions concerning airports and military aviation operations. The proposed solar facility would be located on Edwards AFB, which is a military aviation installation identified in the ALUCP. The proposed gen-tie line would be constructed within 1.5 miles of the Mojave Air and Space Port, which is also identified in the ALUCP.

The Regional Transportation Plan (RTP) for Kern County identifies future transportation improvements needed to serve the projected transportation needs of the County. The RTP details

the existing transportation systems; sets goals, policies, and projects; and identifies funding mechanisms for these projects.

The Kern County Integrated Waste Management Plan is a comprehensive guide for all solid waste management activities in the County. Refer to EIS/EIR Section 3.10, *Infrastructure*, for a more detailed description of the plan.

3.11.1.3 Environmental Setting

This section of the EIS/EIR describes the existing physical environmental conditions in the vicinity of the project as they relate to the potential land use impacts of the proposed project.

Regional Setting

The project region could generally be characterized as rural desert land. land uses in the project region include a mix of vacant land, agriculture, low-density, single-family residential uses, recreational and public facilities, and nature preserves. Urban development is concentrated in Rosamond and Mojave. Renewable energy generation is a significant and growing land use in the desert region, with tens of thousands of acres of wind and solar power plants currently operating, under construction, or planned in the project region.

Local Setting

The proposed solar facility lies within an undeveloped area of Edwards AFB. The site is covered with low-lying desert vegetation and is generally flat, with a few dirt roads traversing the site. The perimeter of the project site is partially surrounded by a chain-link barbed-wire fence along Lone Butte Road and Trotter Avenue. There are power lines along Division Street, which runs north-south through the western portion of the project site. There are also power lines located along Trotter Avenue, which turns at a slight diagonal to the southeast and through the eastern portion of the project site.

The proposed gen-tie line options traverse mostly vacant land covered with sparse, low-lying desert vegetation. There are currently no active agricultural land uses within or surrounding the proposed gen-tie routes. Additionally, the gen-tie lines would follow all roadway rights-of-way.

The majority of the proposed gen-tie line Option 1 would be constructed on land zoned by Kern County as Limited Agriculture (A-1) or Exclusive Agriculture (A). The proposed gen-tie line Option 2 would be constructed on land zoned by Kern County as Limited Agriculture (A-1), Exclusive Agriculture (A), Heavy Industrial (M-3), Medium Industrial (M-2), and Estate (E). Proposed Options A and B, for the east-west gen-tie lines, would primarily be constructed on land zoned by Kern County as Limited Agriculture (A-1) and Exclusive Agriculture (A).

Otherwise, there are no existing structures, paved drives, lighting, or other improvements on the site. There are no natural or man-made water features on the project site. There are ephemeral playas on the project site that are temporarily inundated with water, but these are not considered water features.

Land Ownership and Proprietary Jurisdiction

The proposed solar facility would be located on land owned by the United States Air Force and is therefore subject to guidance and zoning contained in the Edwards AFB IDP. The proposed gen-tie line would run across publicly and privately owned property in unincorporated Kern County. Kern County General Plan and Specific Plan designations and Kern County Zoning would apply to these lands.

Edwards AFB Land Use Designations

The proposed solar facility area has a land use designation of Research and Development and a zoning classification of Range Zone per the Edwards AFB IDP. The Research and Development land use designation is assigned to areas used in basic or applied research in science, medicine, and engineering, including structures and facilities used in the design, development, and testing of prototypes and processes and space and aeronautics research and development. The Range Zone classification includes a variety of activities and uses such as active range, aircraft testing, security forces, landfill, borrow pits, rod and gun club, proficiency firing range, and military training uses. The Range Zone also includes infrastructure-related uses such as water production, wastewater facilities, fuel delivery and lakebed runways. Future uses planned for within the Range Zone include continued development of existing activities as well as development of solar power facilities and other leased uses. The proposed solar facility area is predominantly used for aircraft test ranges and maintained and unmaintained landing sites.

As discussed in Section 1.2 of this EIS/EIR, this land is part of the Air Force's Enhanced Use Lease (EUL) Program. The EUL Program allows the Air Force to lease underutilized, non-excess lands to a third party that would generate monetary or in-kind consideration to the Air Force while also optimizing the value and utility of these lands under authority granted by 10 United States Code Section 2667.

Kern County General Plan Land Use and Zoning Classifications

Although the proposed solar facility would be located on land owned by the Air Force and is subject to guidance and zoning contained in the Edwards AFB IDP, the project site would also be subject to Kern County General Plan designations and Kern County Zoning apply to this land. The County General Plan designation for the project site is "State or Federal Land" and is zoned "limited agriculture." No Kern County Specific Plans apply to the solar facility site. The General Plan land use designations and zoning districts abutting the solar facility project site are summarized in **Table 3.11-1** and shown in **Figures 3.11-1** through **3.11-12**.

Lands within the proposed route options for the gen-tie line are subject to the Kern County General Plan, Mojave Specific Plan, South of Mojave-Elephant Butte Specific Plan, West Edwards Road Settlement Specific Plan, and Kern County Zoning Ordinance. The potential gen-tie route options under consideration traverse largely undeveloped lands that have been assigned a broad variety of land use designations and zoning classifications by Kern County. The majority of the route options traverse lands designated for agricultural purposes, and the "limited agriculture" zoning classification abuts most of the proposed route option segments. A significant portion of the route options traverse lands designated as "wind energy combining zones." Generally, lands located north of Purdy Avenue and east of 40th Street West are designated for a variety of residential, commercial, and industrial land uses. The site of the Windhub Substation is designated for Heavy

Industrial use in both the Kern County General Plan and Zoning Ordinance (Title 19 of the Kern County Code). Kern County land use and zoning designations for lands within the route options for the proposed gen-tie line are shown in **Table 3.11-2**.

Surrounding Land Uses

Solar Facility

To the north, the solar facility site borders approximately 30 existing residences along Trotter Avenue. These rural residences occupy lands designated for Limited Agriculture (Zone A-1) and Estate (E) uses by the Kern County Zoning Ordinance. General Plan land use designations for lands north of the project site are dictated by the West Edwards Road Settlement Specific Plan and the Kern County General Plan listed in Table 3-11.2, *Land Use Designations Surrounding the Solar Facility Area*. The lands abutting the project site to the east and south are undeveloped and lie within the perimeter of Edwards AFB. To the west, the project site borders scattered single-family homes and industrial uses. General Plan land use designations for lands west of the site are dictated by the Kern County General Plan (until the Actis Interim Rural Community Plan is adopted as stated in Section 3.11.1.2 above).

Gen-Tie Line

As described above, the route options for the gen-tie line traverse largely undeveloped lands that have been assigned a broad variety of land use designations and zoning classifications by Kern County, as Table 3-11.2. Areas adjacent to the proposed route options contain a variety of land uses including existing roads, wind energy generating facilities, a historic railroad, modern transmission lines, existing residences, agriculture and industrial uses (ECORP, 2013).

TABLE 3.11-1
LAND USE DESIGNATIONS SURROUNDING THE SOLAR FACILITY AREA

Location in Relation to the Project Site	Summary of General Plan Land Use Designations	Summary of Surrounding Zoning Designations
North	**Map Code 4.1 (Accepted County Plan Areas [Mojave]) -** The Mojave Priority Area Map identifies the lands immediately north of the site as the West Edwards Road Settlement. **Map Code 8.5 (Resource Management) -** Primarily open-space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity. **Map Code 6.2 (General Commercial) -** Retail and service facilities of less intensity than regional centers providing a broad range of goods and services which serve the day-to-day needs of nearby residents. **Map Code 5.6 (Residential - Minimum 2.5 Gross Acres/Unit) -** This constitutes a single-family designation with rural service needs in the valley and desert regions, while in the mountain region residential uses of this density will require urban service provision. **Map Code 5.7 (5.0 Gross Acres/Dwelling Unit Maximum) -** Designated in the outlying, less densely settled areas, often characterized with physical constraints and not requiring connections to public water and sewer infrastructure. **Map Code 7.2 (Service Industrial)** – Commercial or industrial activities which involve outdoor storage or use of heavy equipment. Such uses produce significant air or noise pollution and are visually obtrusive. Uses shall include, but are not limited to: automobile and truck parking, storage and repair shops, freighting or trucking yards, bottling plants, breweries, welding shops, cleaning plants, and other manufacturing and processing activities. **Map Code 8.5/2.5 (Resource Management/Flood Hazard)** – See above for summary of Map Code 8.5. Map Code 2.5 (Flood Hazard) – Special Flood Hazard Areas (Zone A), as identified on the Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA) and supplemented by floodplain delineating maps that have been approved by the Kern County Engineering and Survey Services Department. **Map Code 1.1 (State and Federal Land) -** Applied to all property under the ownership and control of the various state and federal agencies operating in Kern County (military, U.S. Forest Service, Bureau of Land Management, Department of Energy, etc.).	**Limited Agriculture (A-1) -** Designates areas suitable for a combination of estate-type residential development, agricultural uses, and other compatible uses. Final map residential subdivisions are not allowed in the A-1 District. **Estate (E 10) -** Designates areas suitable for larger lot residential living environments. Uses are limited to those typical of and compatible with quiet residential neighborhoods. The minimum lot size shall be ten (10) acres. **Estate (E 2 1/2) -** Designates areas suitable for larger lot residential living environments. Uses are limited to those typical of and compatible with quiet residential neighborhoods. The minimum lot size shall be two and one-half (2 1/2) acres. **Residential Suburban (RS) -** This combining district expands the number and type of permitted domestic agricultural uses within rural residential areas. The uses allowed and regulations established by the RS District are in addition to regulations of the base district with which the RS District is combined. **Mobile Home (MH) -** This combining district provides for the installation of mobile homes with or without foundations in agricultural, resource-related, and residential zoned areas. The uses allowed and regulations established by the MH District are normally in addition to the regulations of the base district with which the MH District is combined. **General Commercial (C-2) -** Designates areas for the widest range of retail commercial activities, including regional shopping centers and heavy commercial uses. The C-2 District may also be combined with the Cluster (CL) Combining District to achieve innovative, creative office or commercial development. **Precise Development Combining (PD) -** Designates areas with unique site characteristics or environmental conditions or areas surrounded by sensitive land uses to ensure that development in such areas is compatible with such constraints.

TABLE 3.11-1
LAND USE DESIGNATIONS SURROUNDING THE SOLAR FACILITY AREA

Location in Relation to the Project Site	Summary of General Plan Land Use Designations	Summary of Surrounding Zoning Designations
	Map Code 3.4 (Solid Waste Disposal Facility) - Existing or planned public, semi-public, or private municipal solid waste facilities, organic waste disposal facilities, and segregated waste stream disposal facilities.	
West	**Map Code 4.2 (Interim Rural Community Plan (Actis)) -** The Actis Interim Rural Community Plan map designates the area immediately west of the site as Map Code 7.2: Service Industrial. **Map Code 7.2 (Service Industrial**) - See above.	**Medium Industrial (M-2) -** Designates areas for general manufacturing, processing, and assembly activities. Uses may not produce fumes, odor, dust, smoke, gas, or vibrations extending beyond zoning district boundaries. **Floodplain Primary (FPP) -** Protects public health and safety and minimizes property damage by designating areas that are subject to flooding with high velocities or depths and by establishing reasonable restrictions on land use in such areas. Uses in the FPP District are limited to those low-intensity uses not involving buildings, structures, and other activities that might adversely affect or be adversely affected by flow of water in the floodway. **Precise Development (PD)** - See above.
East/South	**Map Code 1.1 (State and Federal Land) -** See above.	Lands to the east and south of the site are within Edwards AFB, and are not subject to Kern County zoning.

TABLE 3.11-2
LAND USE DESIGNATIONS SURROUNDING THE GEN-TIE LINE

Portion of Gen-Tie Line Route Options	Summary of General Plan Land Use Designations	Summary of Surrounding Zoning Designations
North-South Gen-Tie Option 1	**Map Code 1.1 (State or Federal Land).** Applied to all property under the ownership and control of the various state and federal agencies operating in Kern County (military, U.S. Forest Service, Bureau of Land Management, Department of Energy, etc.). **Map Code 2.5 (Flood Hazard).** Special Flood Hazard Areas (Zone A), as identified on the FIRM of the FEMA and supplemented by floodplain delineating maps that have been approved by the Kern County Engineering and Survey Services Department. **Map Code 3.3 (Other Facilities).** Existing facilities used for public or semi-public services. Permitted uses include, but are not limited to, airports, sewer farms, treatment plants, and water spreading areas. **Map Code 8.5 (Resource Management).** Primarily open-space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity.	**Exclusive Agriculture (A).** Designates areas suitable for agricultural uses and prevents the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Uses in the A District are limited primarily to agricultural uses and other activities compatible with agricultural uses. **Limited Agriculture (A-1).** Designates areas suitable for a combination of estate-type residential development, agricultural uses, and other compatible uses. Final map residential subdivisions are not allowed in the A-1 District. **Floodplain Secondary (FPS).** This combining district protects public health and safety and minimizes property damage by designating areas that are subject to flooding with relatively low velocities or depths and by establishing reasonable restrictions on land use in such areas. The regulations established by the FPS District shall be in addition to the regulations of the base district with which the FPS District is combined. **Mobile Home (MH).** This combining district provides for the installation of mobile homes with or without foundations in agricultural, resource-related, and residential zoned areas. The uses allowed and regulations established by the MH District are normally in addition to the regulations of the base district with which the MH District is combined. **Residential Suburban (RS).** This combining district expands the number and type of permitted domestic agricultural uses within rural residential areas. The uses allowed and regulations established by the RS District are in addition to regulations of the base district with which the RS District is combined.
North-South Gen-Tie Option 2	**Map Code 2.5 (Flood Hazard).** See above. **Map Code 3.4.1 (Solid Waste Disposal Facility Buffer).** Areas, which are owned by the solid waste disposal facility, within 1,320 feet of a permitted disposal area as defined by the 3.4 Map Code designation. **Map Unit 5.6 (Residential - Minimum 2.5 Gross Acres/Unit).** This constitutes a single-family designation with rural service needs in the valley and desert regions, while in the mountain region residential uses of this density will require urban service provision. **Map Code 7.2 (Service Industrial).** Commercial or industrial activities which involve outdoor storage or use of heavy equipment. Such uses produce significant air or noise pollution and are visually obtrusive. Uses include automobile and truck parking, storage and repair shops, freighting or trucking yards, bottling plants, breweries, welding shops, cleaning plants, and other manufacturing and processing activities. **Map Code 7.3 (Heavy Industrial).** Large-scale industrial activities that are incompatible with other land uses because of potential severe environmental impacts and/or high employee densities. Uses include manufacturing,	**Exclusive Agriculture (A).** See above. **Limited Agriculture (A-1).** See above. **Estate (E).** Designates areas suitable for larger lot residential living environments. Uses are limited to those typical of and compatible with quiet residential neighborhoods. The minimum lot size shall be one-quarter (1/4) acre unless the E District is combined with the Lot Size Combining District where a larger minimum lot size is specified. **Floodplain Primary (FPP).** Applied to those areas lying within the "floodway" as shown on the Flood Boundary Floodway Map (FBFM) or within the "designated floodway" on the state of California's Board of Reclamation's Kern River Designated Floodway Studies, or other maps where engineering studies have been made and adopted by the county board of supervisors. **Floodplain Secondary (FPS).** See above. **Mobile Home (MH).** See above.

TABLE 3.11-2
LAND USE DESIGNATIONS SURROUNDING THE GEN-TIE LINE

Portion of Gen-Tie Line Route Options	Summary of General Plan Land Use Designations	Summary of Surrounding Zoning Designations
	assembling and processing activities, transportation facilities, material and equipment storage, sawmills, foundries, refineries, and petroleum product storage. **Map Code 8.5 (Resource Management).** See above.	**Medium Industrial (M-2).** Designates areas for general manufacturing, processing and assembly activities. Uses may not produce fumes, odor, dust, smoke, gas or vibrations extending beyond zoning district boundaries. **Heavy Industrial (M-3).** Designates areas suitable for heavy manufacturing and industrial uses which have the greatest potential for producing undesirable or adverse by-products, including traffic, noise, odors, dust and vibrations. The M-3 district should be located in places substantially removed from residential areas. **Precise Development (PD) Combining District.** This combining district designates areas with unique site characteristics or environmental conditions or areas surrounded by sensitive land uses to ensure that development in such areas is compatible with such constraints. All development in the PD Combining District is subject as a minimum to Special Development Standards; however, a Special Development Standards Plot Plan Review is not required. The application of the PD District may be initiated by either the property owner or the County. The PD District may be combined with any base district. The regulations established by the PD District shall be in addition to the regulations of the base district with which the PD District is combined.
East-West Gen-Tie Option	**Map Code 2.5 (Flood Hazard).** See above. **Map Code 3.3 (Other Facilities).** See above. **Map Code 5.2 (16 Dwelling Units/Net Acre Maximum).** Primarily intended for small multiple-family structures such as duplexes, triplexes, and mobile home parks which require a full array of urban services, with a minimum of 2,722 square feet of site area per unit and yielding a maximum of 16 units per net acre in conformance with precise development, cluster, or other special planning ordinance standards. **Map Code 5.3 (10 Dwelling Units/Net Acre Maximum).** See above. **Map Code 5.4 (4 Dwelling Units/Net Acre Maximum).** Designed to accommodate urban single-family development on lots with a minimum average size of 1/4 net acre. **Map Code 5.6 (Residential – Minimum 2.5 Gross Acres/Unit).** See above. **Map Code 6.2 (General Commercial).** Retail and service facilities of less intensity than regional centers providing a broad range of goods and services which serve the day-to-day needs of nearby residents. **Map Code 6.3 (Highway Commercial).** Uses which provide services, amenities, and accommodations at key locations along major roadways to visitors and through traffic. **Map Code 7.3 (Heavy Industrial).** See above. **Map Code 8.5 (Resource Management).** See above.	**Exclusive Agriculture (A).** See above. **Limited Agriculture (A-1).** See above. **Highway Commercial (CH).** Designates areas for uses and services normally associated with the traveling public. The CH district shall be located adjacent to or in close proximity to major highways. The CH district may be combined with the Cluster (CL) combining district to achieve innovative, creative commercial development. The CH district is intended to promote a unified grouping of travel-oriented uses such as gas stations, restaurants and motels. It is also intended to permit limited urban type uses in rural areas adjacent to highways with a minimum of encroachment on surrounding agricultural activities. **Commercial Office (CO).** Designates areas suitable for business and professional offices. The CO district may serve as a buffer between retail commercial and residential areas. The CO district may also be combined with the Cluster (CL) combining district to achieve innovative, creative office or commercial development. Uses in the CD district are limited to low-intensity commercial activities and generally higher-density residential developments. **Estate (E).** See above. **Floodplain Secondary (FPS).** See above. **Mobile Home (MH).** See above. Heavy Industrial (M-3). See above. Precise Development (PD). See above.

TABLE 3.11-2
LAND USE DESIGNATIONS SURROUNDING THE GEN-TIE LINE

Portion of Gen-Tie Line Route Options	Summary of General Plan Land Use Designations	Summary of Surrounding Zoning Designations
	Low Den. Res. (Low Density Residential). See above.	**Low Density Residential (R-1).** Designates areas which will be suitable for traditional smaller lot, single-family homes and compatible uses. Maximum density is limited to ten (10) dwelling units per net acre. Typically, the R-1 district will be characterized by the typical single-family subdivision. However, innovative low-intensity projects are allowed in combination with the Cluster (CL) combining district.
East-West Gen-Tie Option A and B	**Map Code 5.3 (10 Dwelling Units/Net Acre Maximum).** See above. **Map Code 7.3 (Heavy Industrial).** See above. **Map Code 8.3 (Extensive Agriculture).** Agricultural uses involving large amounts of land with relatively low value-per-acre yields, such as livestock grazing, dry land farming, and woodlands. Minimum parcel size is 20 acres gross, except lands subject to a Williamson Act Contract/Farmland Security Zone Contract, in which case the minimum parcel size shall be 80 acres gross. **Map Code 8.4 (Mineral and Petroleum).** Areas which contain producing or potentially productive petroleum fields, natural gas, and geothermal resources, and mineral deposits of regional and Statewide significance. Uses are limited to activities directly associated with the resource extraction. Minimum parcel size is five acres gross. **Map Code 8.5 (Resource Management).** See above. **Low Den. Res. (Low Density Residential).** See above.	**Exclusive Agriculture (A).** See above. **Limited Agriculture (A-1).** See above. **Heavy Industrial (M-3).** See above. **Open Space (OS).** Designates lands in public or private ownership that are essentially unimproved and should remain in open space use for the preservation of identified scenic values, habitat for endangered plants or animals, unique geologic features, natural resources, passive recreational values, or for the protection of public health and safety. **Platted Lands (PL).** Recognizes legally existing lots within recorded subdivisions which had been rendered nonconforming with regard to minimum lot size requirements of the various resource designations (8.1, 8.2, 8.3, 8.4 and 8.5) of the county general plan. Uses in the PL district are limited primarily to residential uses and other activities compatible with the area to which the PL district is applied. Future land divisions within the PL district are prohibited. **Residential Suburban (RS).** See above. **Wind Energy (WE).** A combining district and shall only be applied to the following district classifications: Exclusive Agriculture (A), Industrial (M-1, M-2, and M-3), Natural Resource (NR) with a minimum lot size of twenty (20) acres, Recreation-Forestry (RF) with a minimum lot size of twenty (20) acres, Limited Agriculture (A-1) with a minimum lot size of twenty (20) acres, or Estate (E) with a minimum lot size of twenty (20) acres. The uses allowed and the regulations required in the WE district shall be in addition to the regulations of the base district with which the WE district is combined. The WE district may not be adopted as a single land use designation.

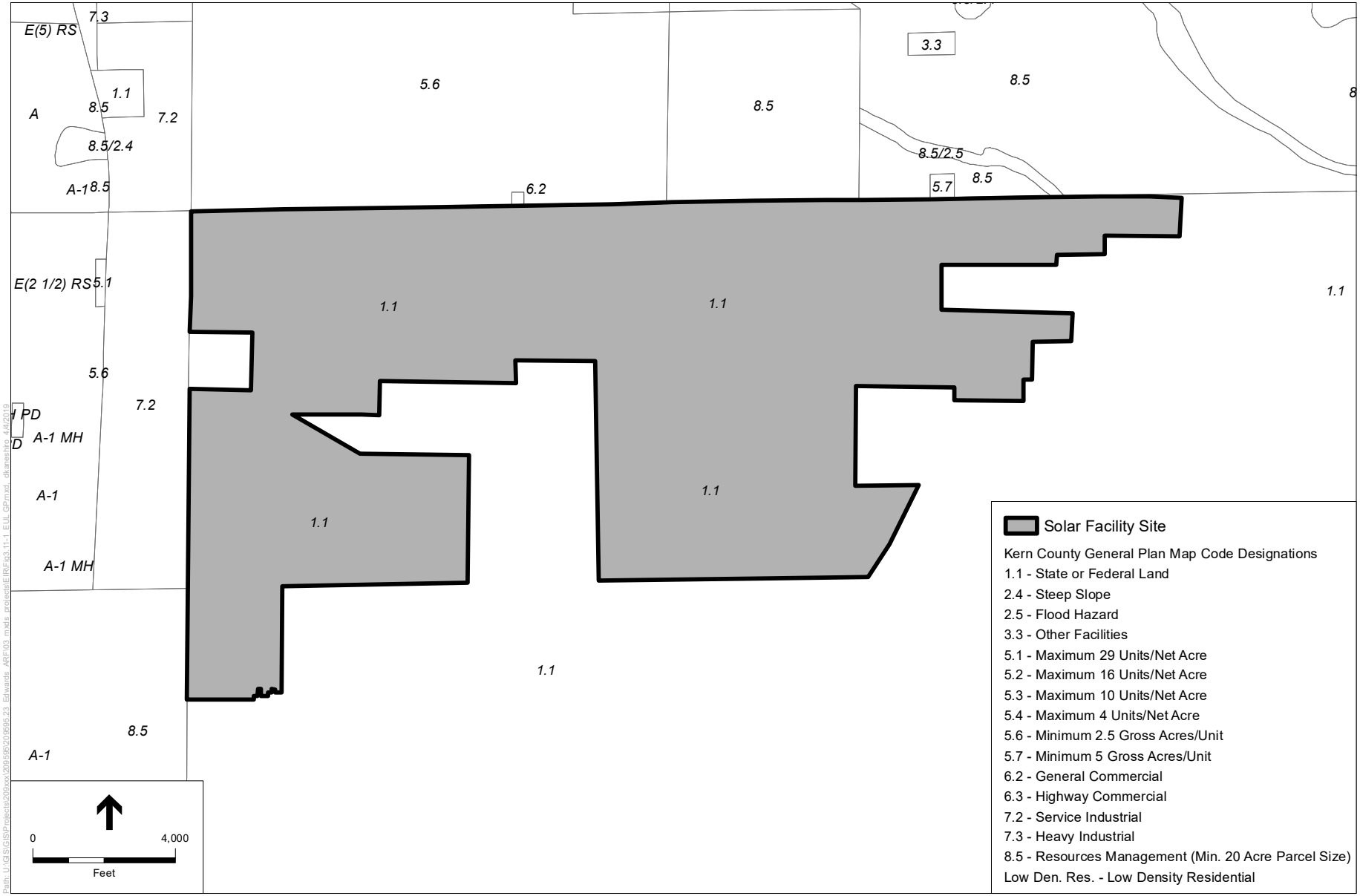


Figure 3.11-1: EXISTING GENERAL PLAN: SOLAR GENERATION FACILITY

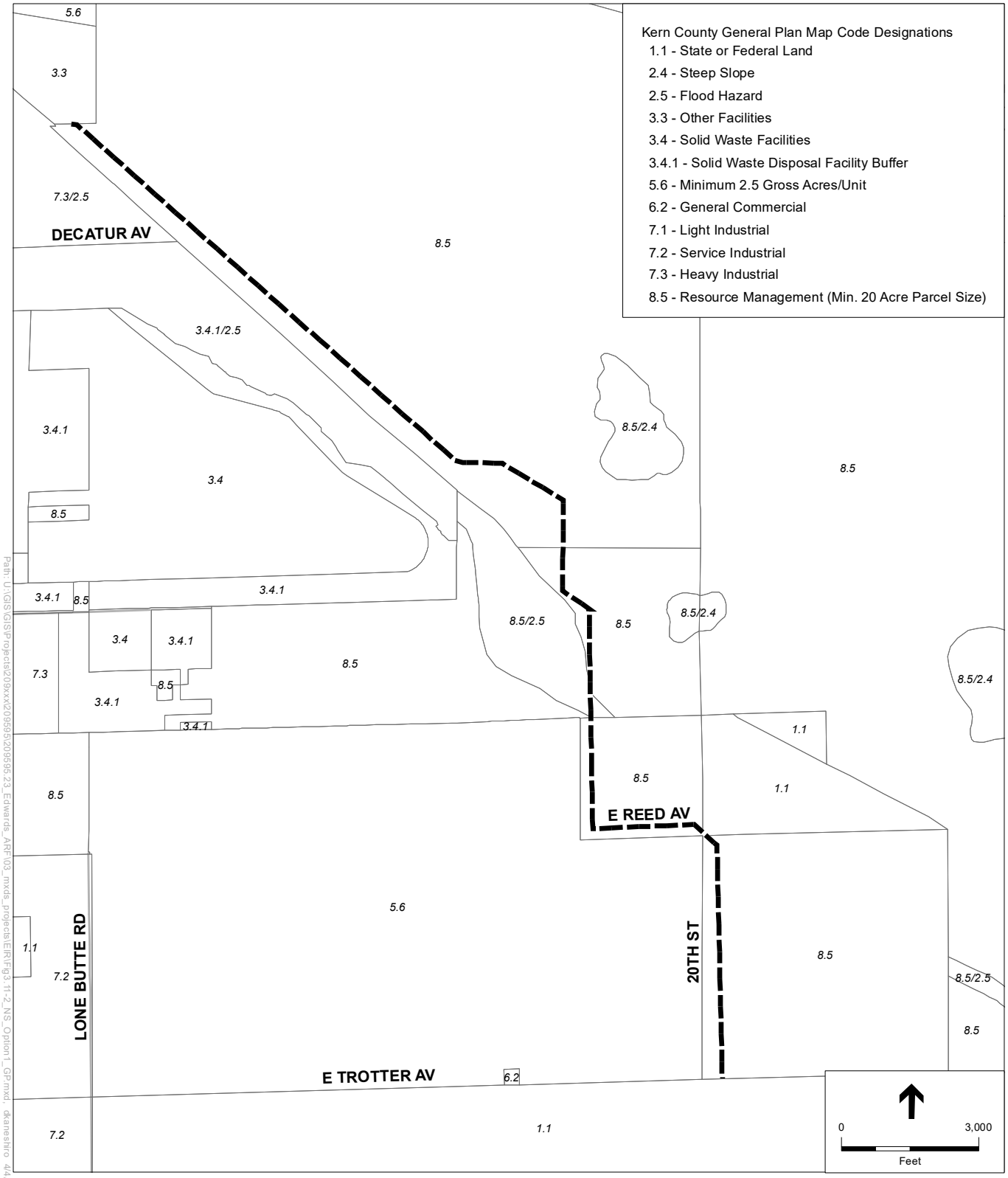


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Figure 3.11-2: EXISTING GENERAL PLAN: NORTH-SOUTH GEN-TIE ROUTE OPTION 1

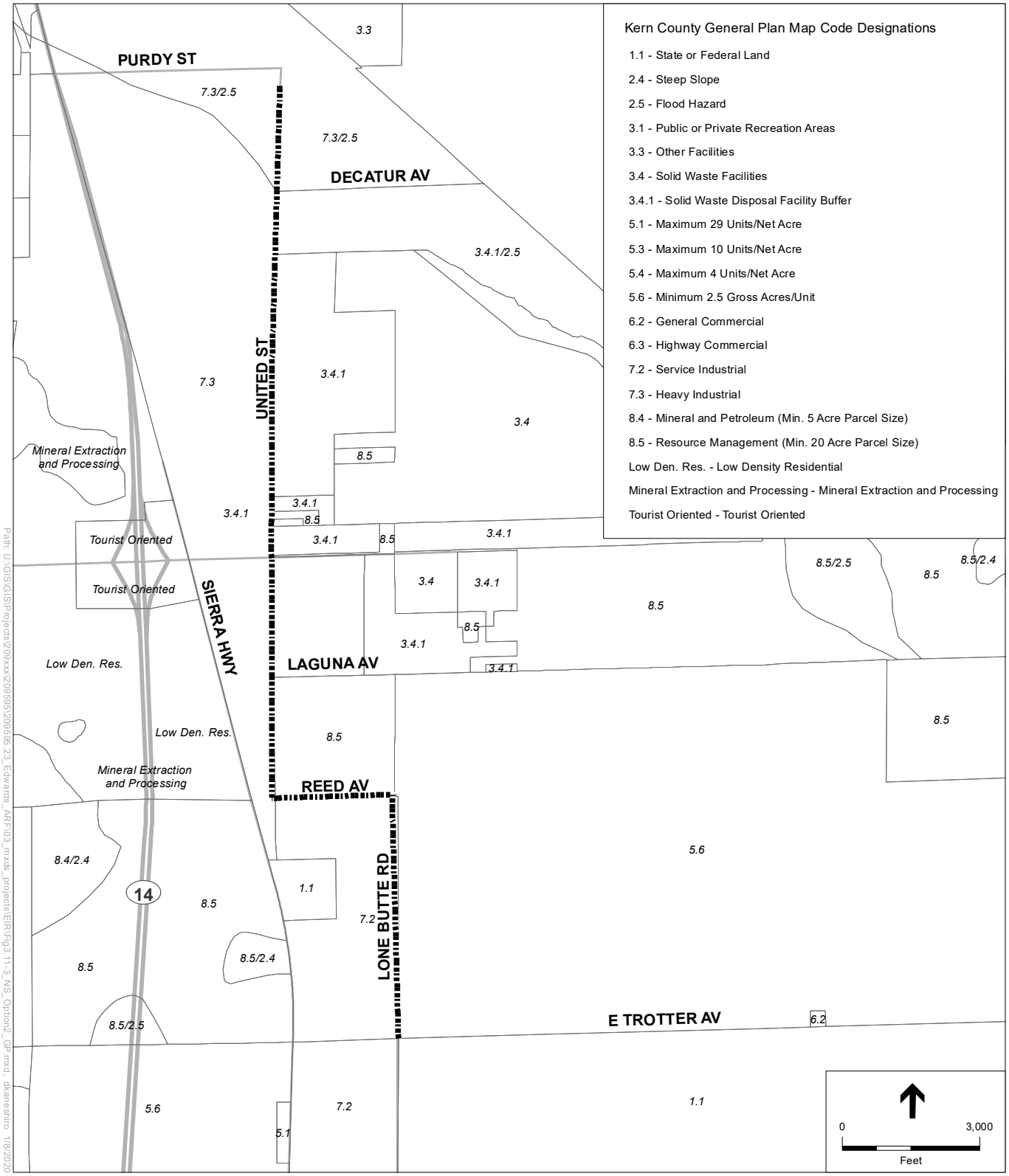

Figure 3.11-3 EXISTING GENERAL PLAN: NORTH-SOUTH GEN-TIE ROUTE OPTION 2

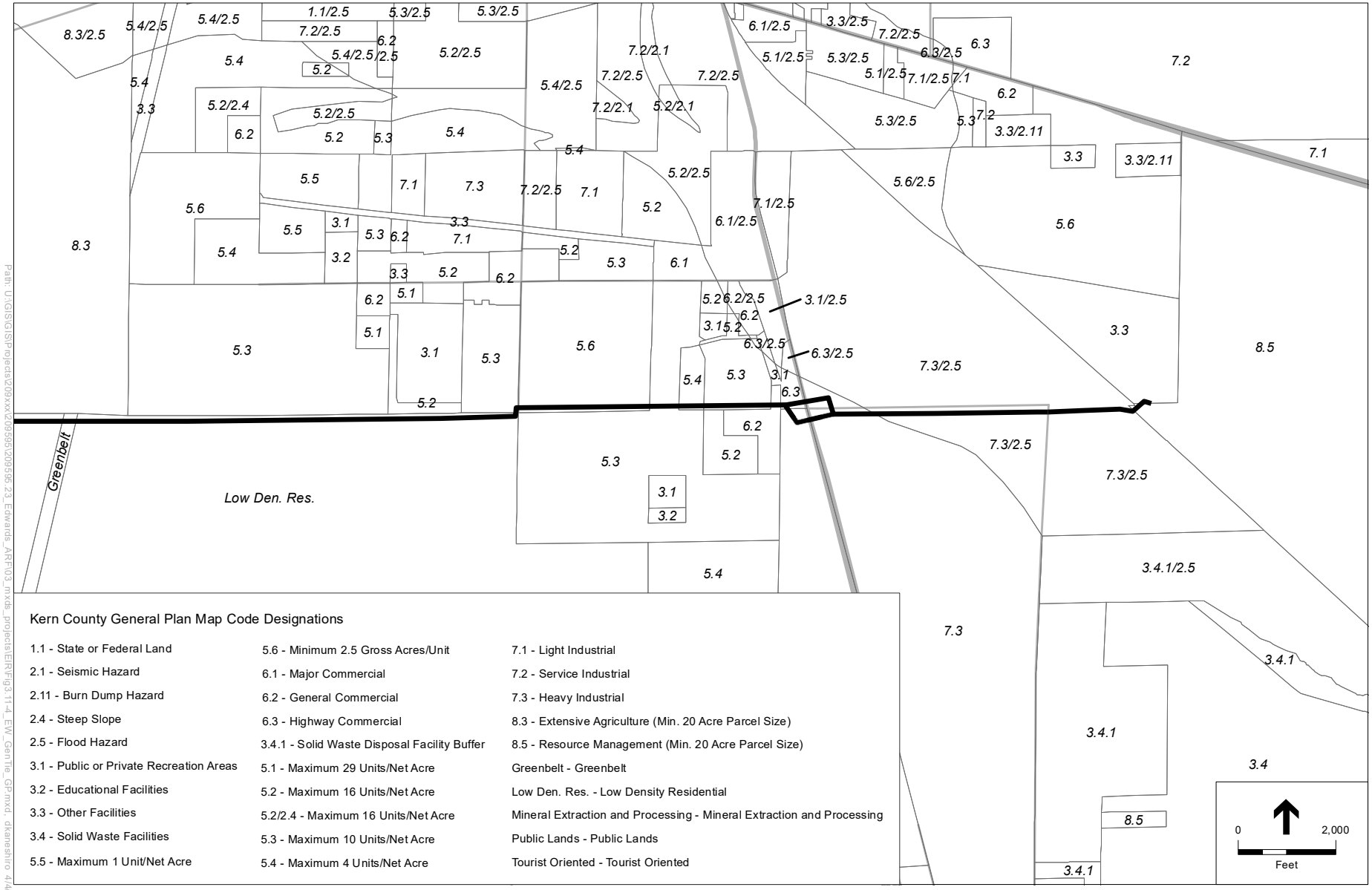

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Figure 3.11-4: EXISTING GENERAL PLAN: EAST WEST GEN-TIE ROUTE OPTION

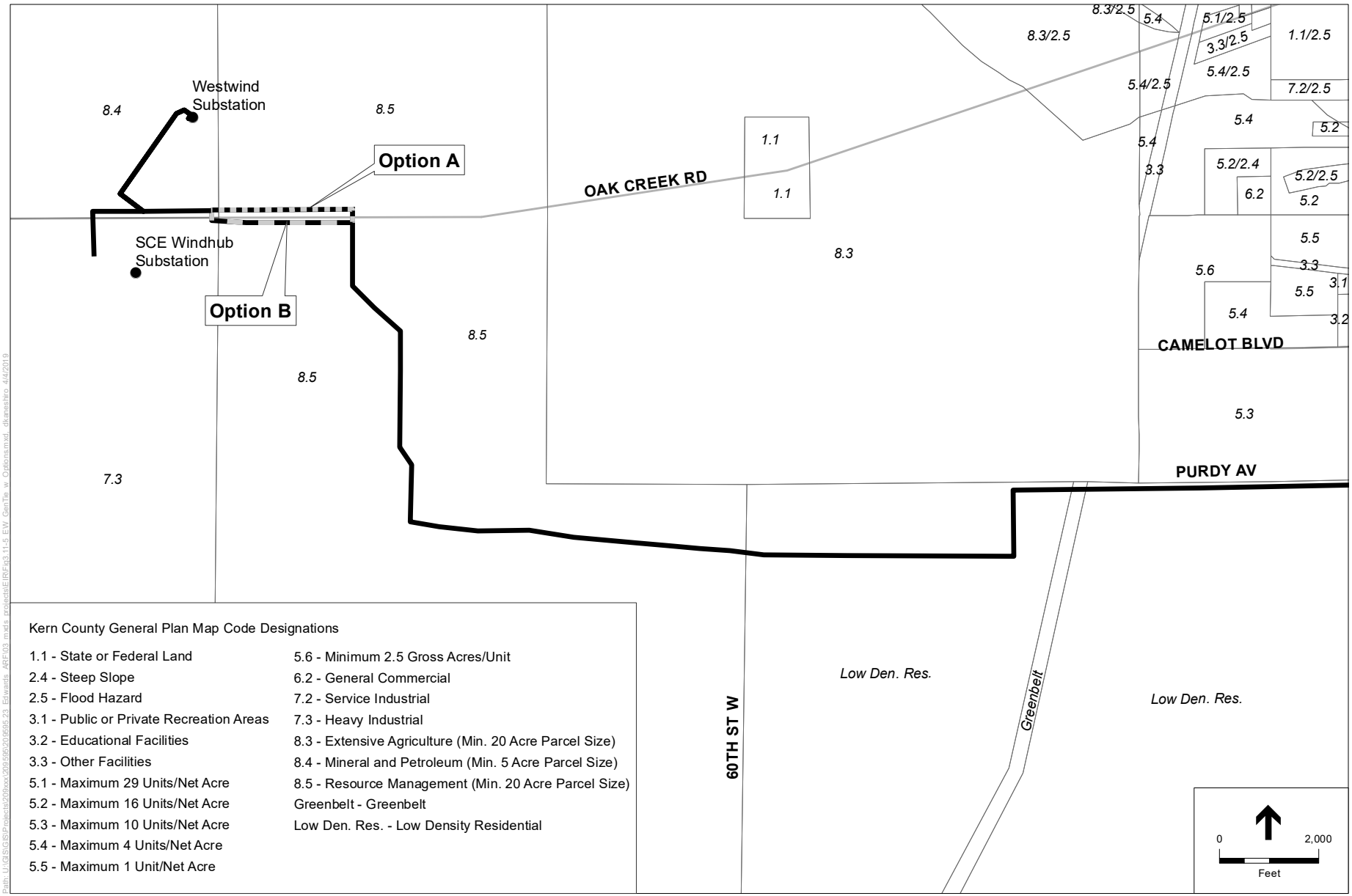

Figure 3.11-5: EXISTING GENERAL PLAN: EAST WEST GEN-TIE ROUTE OPTIONS A & B

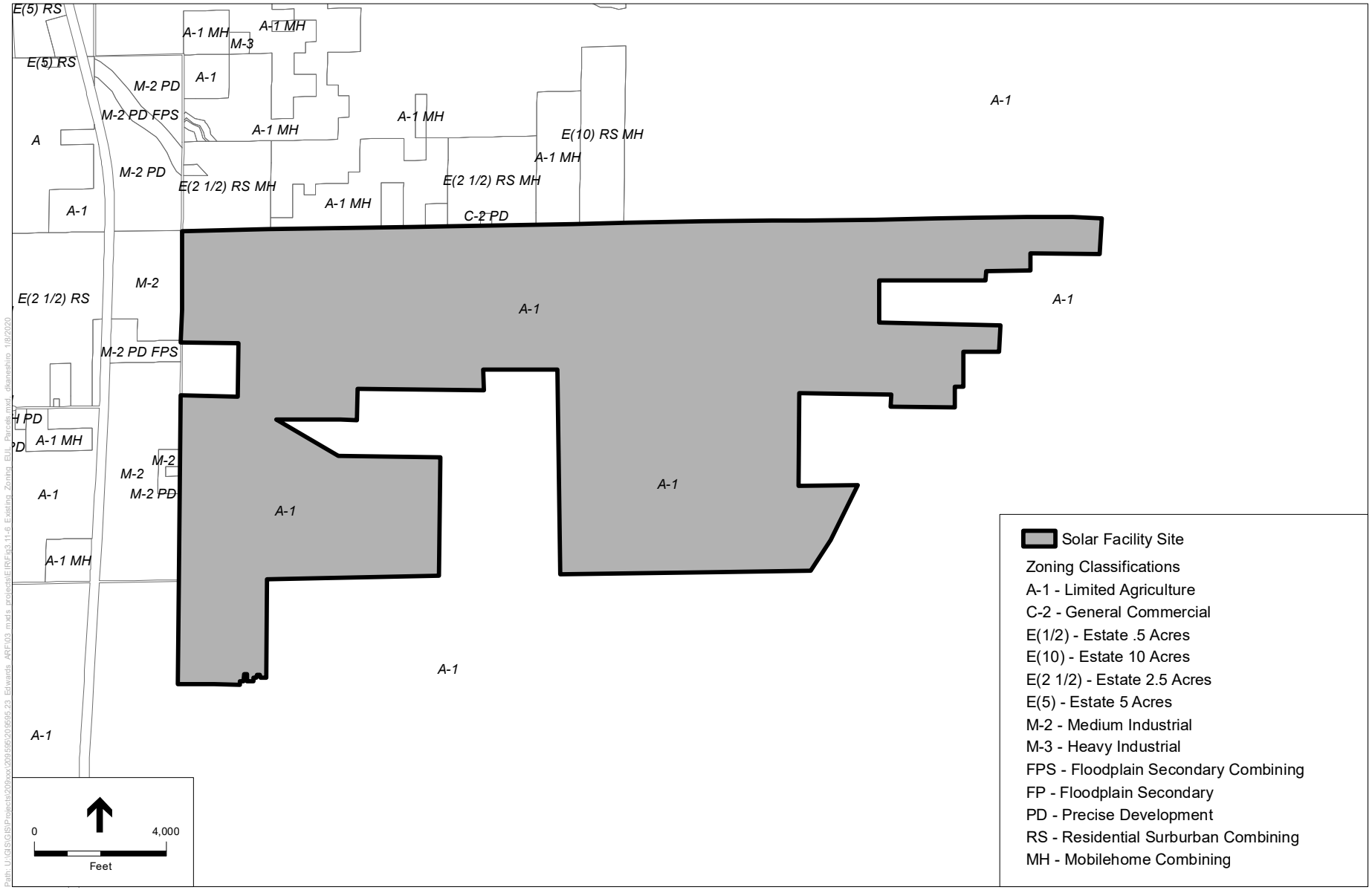

Figure 3.11-6: EXISTING ZONING: SOLAR GENERATION FACILITY

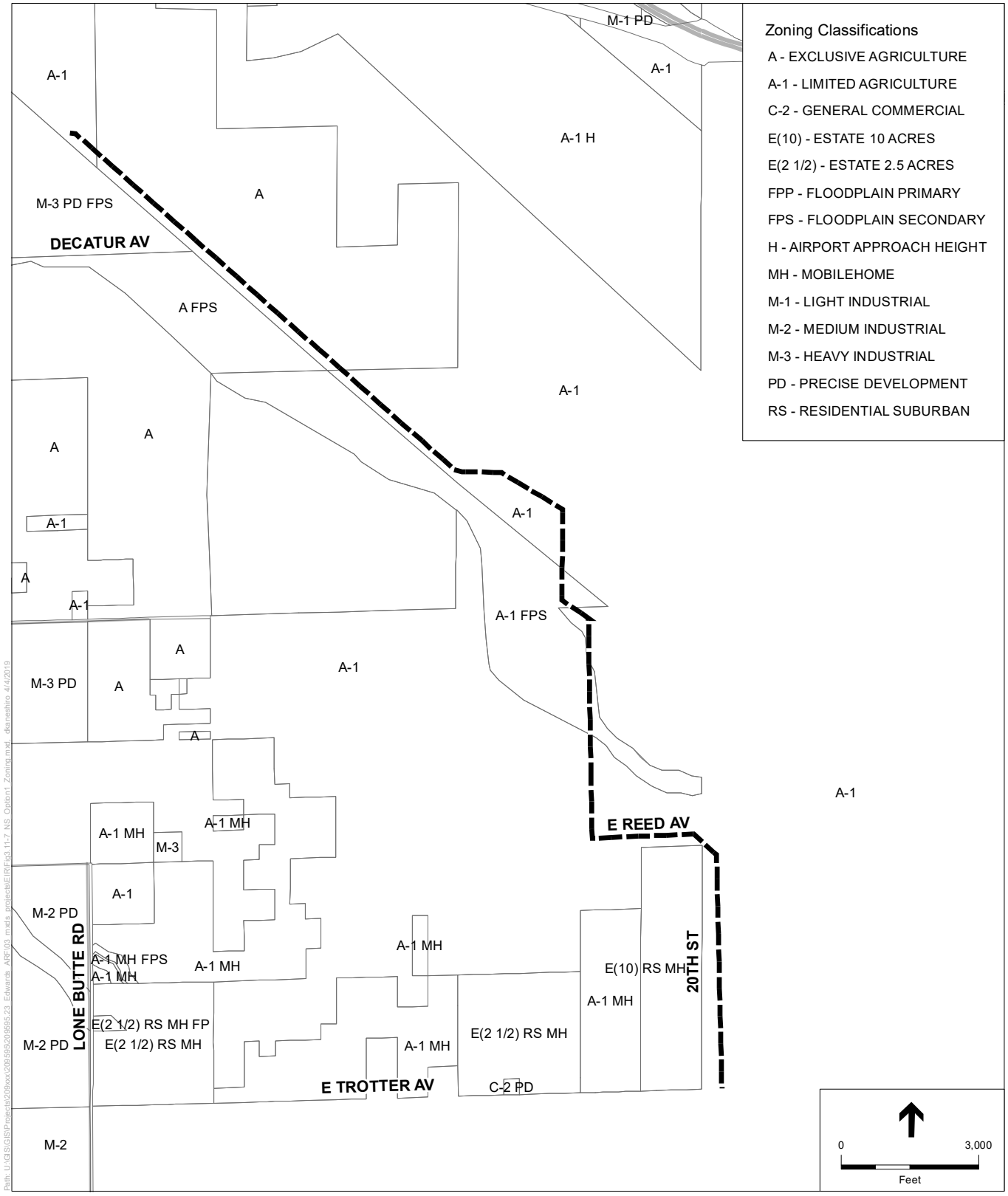

Figure 3.11-7: EXISTING ZONING: NORTH-SOUTH GEN-TIE ROUTE OPTION 1

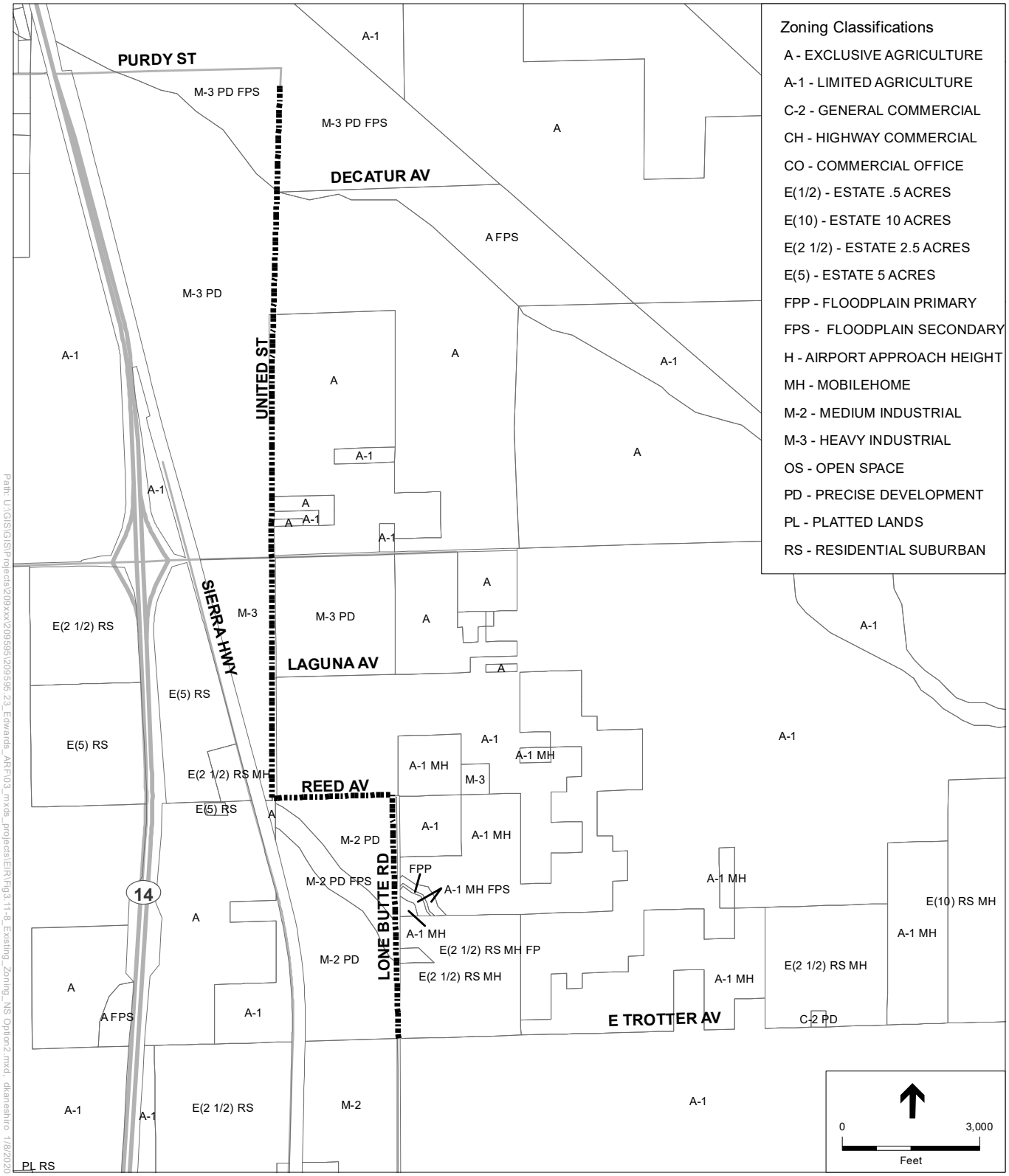

Figure 3.11-8 EXISTING ZONING: NORTH-SOUTH GEN-TIE ROUTE OPTION 2

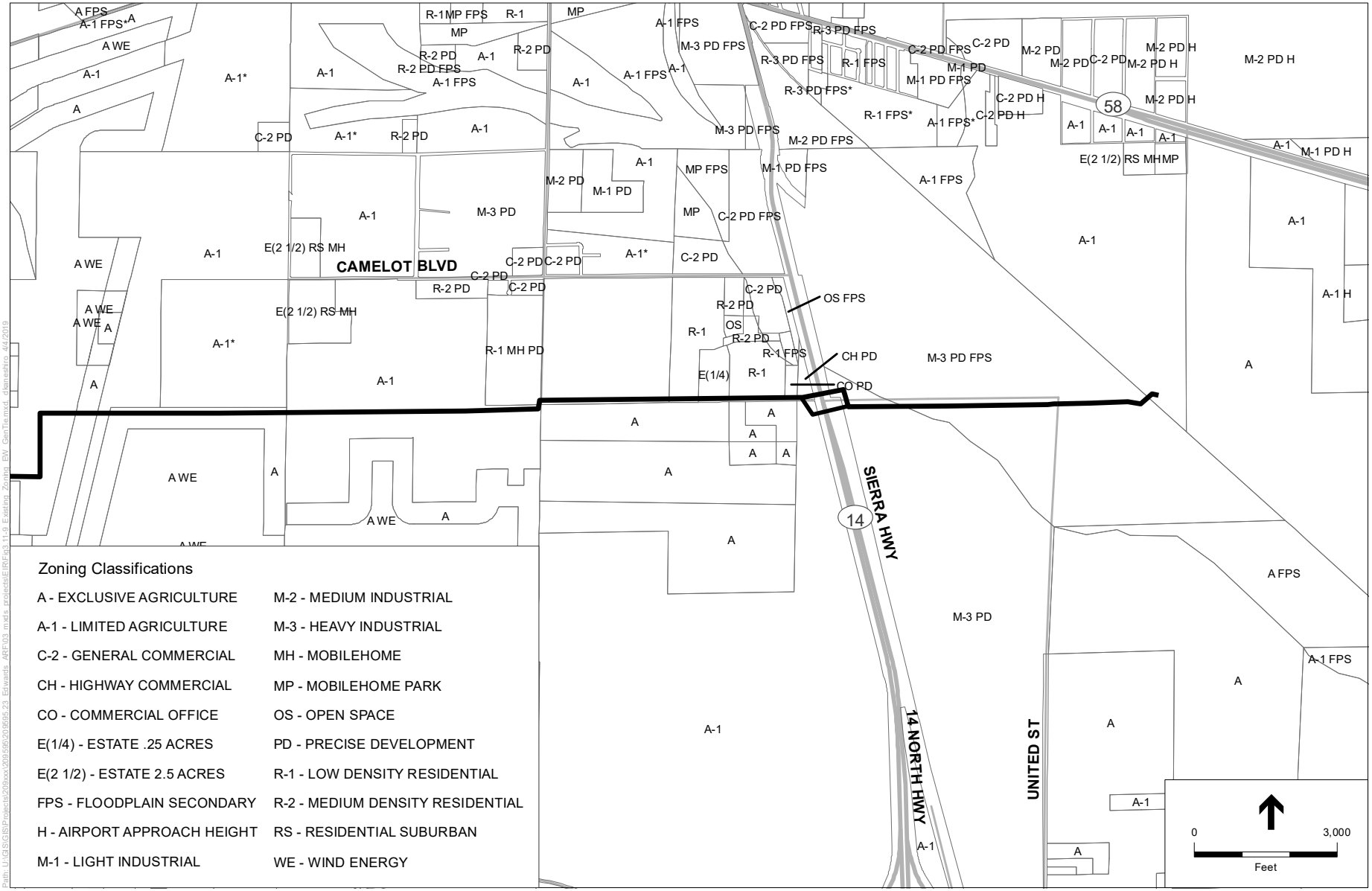

Figure 3.11-9: EXISTING ZONING: EAST-WEST GEN-TIE ROUTE OPTION

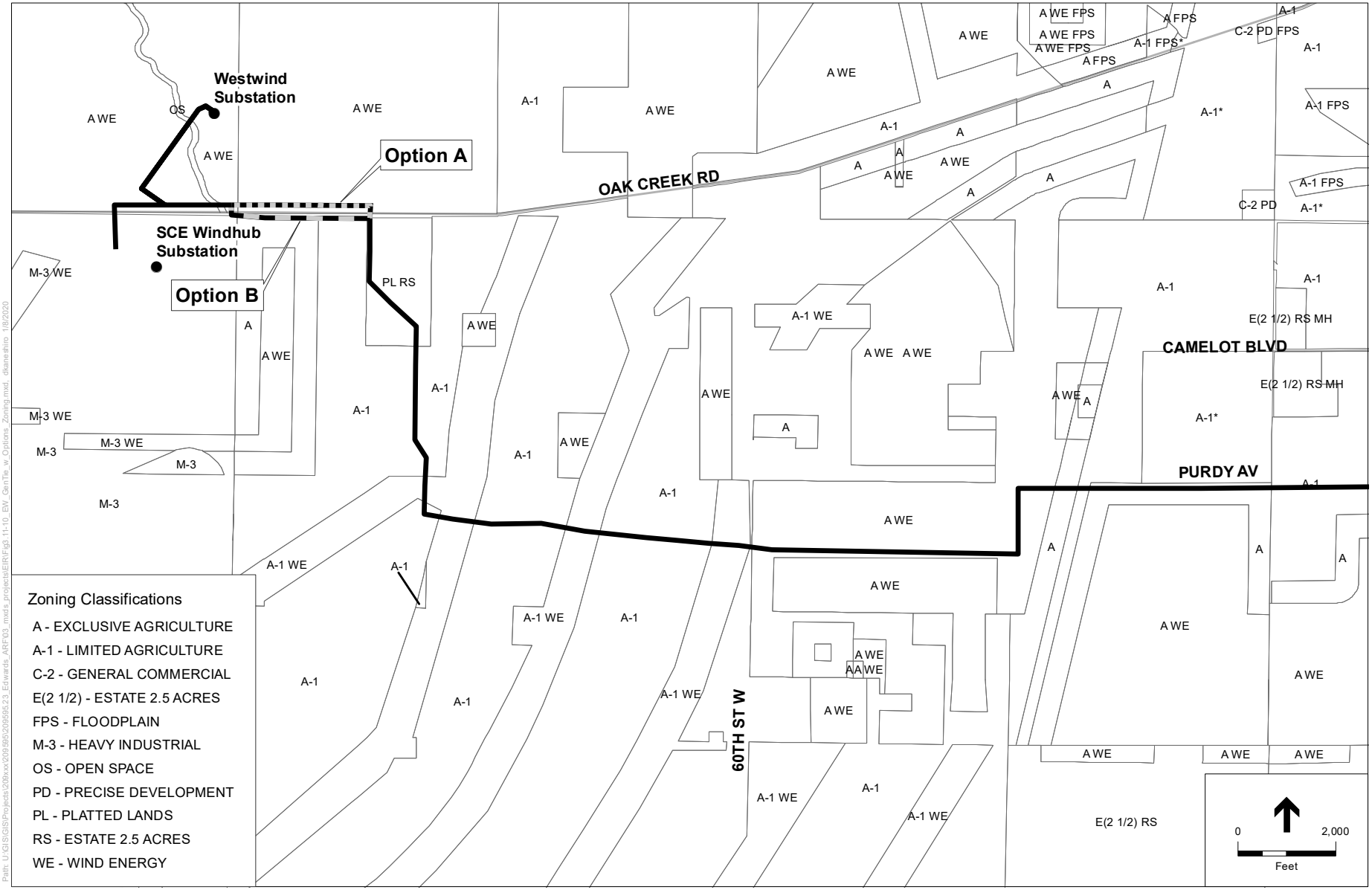

Figure 3.11-10: EXISTING ZONING: EAST-WEST GEN-TIE ROUTE OPTIONS A & B

3.11.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences relating to land use for the Edwards AFB EUL Solar Project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.11.2.1 Assessment Methods/Methodology

The potential impacts associated with the proposed project were evaluated on a qualitative basis through a comparison of the existing and proposed land uses, in consideration of the applicable planning goals, policies, and objectives identified above. The evaluation of project impacts is based on professional judgment, analysis of the land use policies of Edwards AFB and Kern County and the significance criteria established in Appendix G of the CEQA Guidelines. Compliance with the aforementioned policies is illustrated in a consistency tables provided in the project impact section, below.

3.11.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant related to land use and safety if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

A project would have a significant adverse effect on land use if it would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the General Plan, Specific Plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

The County determined in the NOP (see Appendix A) that the following environmental issue areas would result in no impacts or less-than-significant impacts and were therefore scoped out of requiring further review in this EIS/EIR.

- Physically divide an established community.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

Please refer to Appendix A of this EIS/EIR for a copy of the Initial Study/NOP and additional information regarding this issue.

3.11.3 Analysis of Environmental Effects

3.11.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

The following provides consistency determinations for land use plans, policies, and regulations that are applicable to the proposed project:

Federal Aviation Administration

FAR Title 14, Part 77, establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (3.8 miles) of an airport runway. Under Alternative A, the photovoltaic (PV) panels are not likely to exceed 12 feet above the ground surface. The substation equipment would generally be between 15 and 35 feet tall, with the exception of the transmission towers, which would be a maximum of 60 feet in height and a lightning protection mast, which would not exceed 75 feet in height. The height of poles for the gen-tie line would likely range between 100 and 180 feet, and would not exceed 215 feet, and would be required to adhere to FAA notification requirements of Code of Federal Regulation 77.17. Refer to EIS/EIR Section 3.4, *Airspace Management and Use*, for further information on the FAA.

Edwards AFB Installation Development Plan

The land use zoning designations contained in the Edwards AFB IDP provide guidance for development and improvement of the base to ensure an efficient, aesthetic, and safe environment for base personnel. The proposed solar facility would be located in an area designated with a land use category of Research and Development and a zoning of Range Zone by the Edwards AFB IDP (USAF, 2012).

The Research and Development land use category covers approximately 244,515 acres, a majority of the undeveloped lands within Edwards AFB (95th Air Base Wing, 2012). Lands designated for Research and Development are intended to be used directly in basic or applied research in science, medicine, or engineering, and can include structures and facilities used in space and aeronautics research. The Edwards AFB IDP includes guidance regarding the compatibility of different land use designations assigned to the base. Per the Edwards AFB IDP, the Research and Development land use category is considered to be compatible with several other land use categories, including Communications Systems, Industrial, Office Buildings, Storage, Training Land, and Other (including utility infrastructure, electrical substations, and support facilities) (95th Air Base Wing, 2012). As a result, the proposed solar facility, which would include utility infrastructure, electrics substations, and supporting operation and maintenance office buildings, would be considered compatible with the existing Research and Development land use designation.

Lands included in the Range Zone zoning category include a wide range of activities not included in other zoning designations. One of the potential future uses of Range Zone areas specified by the Edwards AFB IDP is development of solar power facilities and other leased land uses (95th Air Base Wing, 2012). Therefore, the proposed solar facility would be considered compatible with the zoning designation of the project site under the Edwards AFB IDP.

Kern County General Plan and Specific Plans

Because the proposed solar facility would be located on Edwards AFB, it would not be subject to the plans and policies contained in the Kern County General Plan and Specific Plans.

The proposed route options for the gen-tie line would traverse lands under the jurisdiction of Kern County and would pass through lands subject to the Kern County General Plan, Mojave Specific Plan, South Mojave Elephant Butte Specific Plan, West Edwards Road Settlement Specific Plan, Actis Interim Rural Community Plan Map. An analysis of the proposed project's consistency with applicable Kern County General Plan and Specific Plan policies and objectives is provided in Table 3.11-3 of this EIS/EIR. Based on this analysis, the proposed project would be consistent with the Kern County General Plan and applicable Specific Plans.

Kern County Zoning Ordinance

Because the proposed solar facility would be located on Edwards AFB, it would not be subject to the Kern County Zoning Ordinance.

As described, the proposed route options for the gen-tie line would traverse lands under the jurisdiction of Kern County and would therefore be subject to the Kern County Zoning Ordinance. As shown in Table 3.11-2, lands within the proposed route options fall under a wide variety of zoning classifications. Per the Kern County Zoning Ordinance, utility and communications facilities, including transmission lines and supporting towers, poles, and underground facilities, are permitted uses under the applicable zoning classifications. Therefore, the proposed project would be consistent with the Kern County Zoning Ordinance.

The proposed project would be located across three military review zones as shown on figure 19.08.160 in the Kern County Zoning Ordinance, including hatched green (no review requirement, County to provide building permit summary), yellow (all structures over 500 feet), and hatched red (all wind turbines and communication towers over 80 feet, all other structures over 100 feet). Per Section 19.08.160 of the Zoning Ordinance, structures exceeding the maximum heights established for each zone must obtain concurrence from the military authority responsible for operations in that area that the height of the structure would create no significant military mission impacts. As described in Chapter 2, *Project Description*, poles associated with the gen-tie line may be up to 215 feet tall and therefore would be required to undergo military review. For further discussion of the relationship of the project to military flight operations please refer to Section 3.4, *Airspace Management and Use*.

Kern County Airport Land Use Compatibility Plan

The proposed solar facility would be located approximately 6 miles from the Mojave Air and Space Port and 8 miles from the Edwards AFB airport facilities. At the nearest point, the proposed route for the gen-tie line would pass within 1.5 miles of the Mojave Air and Space Port. Section 4.9.5 of the ALUCP defines policies associated with the Mojave Air and Space Port, including requirements regarding the height of proposed structures as well as certain land use characteristics such as glare. The proposed solar facility would be located outside of the Mojave Airport influence area. Furthermore, as the proposed solar panels would be composed of anti-reflective material, glare resulting from the panels is not expected to be a concern for pilots and would not result in conflict

with the policies of the ALUCP (refer to Section 3.4, *Airspace Management and Use*, for further details regarding glare). Depending on the final route, the gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. As described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, poles associated with the gen-tie line may be up to 215 feet tall, which would exceed the 100-foot height limit for structures in Zone E-1. However, as previously discussed, the ALUCP can provide an exemption to these height requirements for gen-tie lines after review which would be required as part of the FAA notification requirements of Code of Federal Regulation 77.17. Therefore, the gen-tie line would comply with the ALUCP.

Section 1.7.1 of the ALUCP requires that, prior to approval of any type of land use development, findings shall be made that such development is compatible with training and operational missions of relevant military operations. Section 4.17.3 of the ALUCP requires notification of construction of the project to China Lake Naval Air Weapons Station and Edwards AFB. For further discussion of the relationship of the project to military flight operations please refer to Section 3.4, *Airspace Management and Use*.

Additionally, the proposed project would not result in an increase in air traffic levels or a change in location of air traffic patterns that would result in a substantial safety risk, as air traffic patterns would not be affected. As a result, the proposed project would be consistent with the Kern County ALUCP.

CEQA: Impact Significance Determination

Impact 3.11-1: The project would conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the projects (including, but not limited to, the General Plan, Specific Plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

As discussed in the NEPA analysis, the proposed project would not conflict with FAA regulations or the Edwards AFB IDP. Additionally, the proposed project would not conflict with the Kern County General Plan, the Mojave Specific Plan, the South of Mojave-Elephant Butte Specific Plan, the West Edwards Road Settlement Specific Plan, Actis Interim Rural Community Plan Map, the Kern County Zoning Ordinance, or the Kern County ALUCP as reflected in Table 3-11.3. Therefore, impacts related to conflict with applicable land use plans, policies, and regulations would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

3.11.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Alternative B would consist of the same land uses as Alternative A on a reduced scale. Alternative B includes the construction of a utility-scale solar facility on 1,500 acres of land located within the same site as Alternative A (approximately one-third to one-half of the acreage of Alternative A). Alternative B would utilize the same gen-tie line route options proposed in Alternative A. Because Alternative B would be located on the same sites as Alternative A, Alternative B would be subject to the same plans and policies as described above for Alternative A. Land uses proposed under Alternative B would be the same as those proposed under Alternative A; therefore, potential impacts to land use would be the same as described above under Alternative A.

CEQA: Impact Significance Determination

Alternative B would be located on the same site as the solar facility and would use the same and the gen-tie route options, and would be subject to the same plans and policies as Alternative A. Because Alternative B would consist of the same land uses as Alternative A, significance conclusions for Alternative B would be the same as Alternative A, as shown in Table 3-11.3. Therefore, Alternative B would be considered consistent with all applicable plans, policies, and regulations and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

3.11.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting described above. Thus, Alternative C would not affect the land use plans, policies, and regulations described.

CEQA: Impact Significance Determination

Alternative C would result in no impacts regarding conflict with land use plans, policies, or regulations.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No impact.

3.11.4 Cumulative Impact Analysis

3.11.4.1 NEPA: Cumulative Environmental Effects and Their Significance

The geographic scope for cumulative effects relating to land use includes the areas located within the Kern County General Plan and Specific Plans and Edwards AFB IDP. There are multiple projects, identified in Table 3-1, including 44 utility-scale solar and wind energy production facilities, are proposed throughout Kern County. Many are located, like the project site, in the Antelope Valley and Mojave Desert. Cumulative impacts to land use could occur if other existing or proposed projects, in conjunction with the project, had or would have impacts on land use that, when considered together, would be significant.

The anticipated impacts of the proposed project in conjunction with cumulative development in the area of the projects could increase urbanization and result in the loss of open space within the desert region of the County. The potential for the cumulative effects caused by the abandonment of the infrastructure associated with the solar facility on Edwards AFB could result in impacts on land uses on base should it be determined that these facilities are no longer viable commercial operations. Decommissioning of a solar facility on Edwards AFB will require a separate NEPA analysis and financing for decommissioning will be provided by the Developer as part of the EUL agreement. Potential land use impacts require evaluation on a case-by-case basis because of the interactive effects of a specific development and its immediate environment. The applicable General Plans, Specific Plans, and zoning requirements establish the land use goals, policies, and permitted uses for existing and future development in the project region. As shown in Table 3.11-3, the proposed project would be consistent with the goals and policies of the applicable General and Specific Plans as well as other policies related to land use. In addition, the proposed project would be an allowable use that would not conflict with the applicable zoning classifications. By complying with the General Plans, Specific Plans, and zoning, the proposed project would not result in an adverse cumulative land use impact.

3.11.4.2 CEQA: Cumulative Impact Significance Determination

The geographic scope for cumulative effects relating to land use includes the areas located within the Kern County General Plan and Specific Plans and Edwards AFB IDP. This scope was selected because the applicable General Plans, Specific Plans, and zoning establish the land use goals, policies, and permitted used for existing and future development in the project region. As described in Chapter 2, *Project Description*, there are a number of solar and other development projects, proposed throughout Antelope Valley including in Kern County and Los Angeles County. Many are located, like the project site, in the Mojave Desert. Cumulative impacts to land use could occur if other existing or proposed projects, in conjunction with the project, had or would have impacts on land use that, when considered together, would be significant. The surrounding area is still relatively rural in nature, to the north, the project site borders approximately 30 existing residences along Trotter Avenue, with the land use designation of Limited Agriculture (Zone A-1) and Exclusive Agriculture (E) by the Kern County Zoning Ordinance. To the east and south of the project site the land is undeveloped and lies within the perimeter of Edwards AFB. To the west, the project site borders scattered single-family homes and industrial uses.

The proposed project and present or future cumulative projects would contribute to a change in land use consistent with other renewable energy development in and around the project site, and result in a cumulative impact to land uses in the region. Currently, there are five solar development projects within the vicinity of the proposed project that would result in impacts similar to the Edwards AFB Solar Project. These projects include the Beacon Solar (approved in 2012), Willow Springs Solar (EIR Certified March 2016), Catalina Renewables (operational in 2013), North Lancaster Ranch (approved 2014), and R E Rosamond (approved in 2011). Similar to the proposed project, the land use impacts of solar projects within vicinity are inconsistency with an applicable land use plan, policy, or regulation of an agency with jurisdiction of over the projects. However, the impacts from all other five projects were determined less than significant in their analysis and impacts from the proposed project in conjunction with surrounding projects have also been determined to be less than significant. The significance determination is based on the fact that each project has demonstrated in the analysis consistency with the Kern County General Plan, Kern County Zoning Ordinance, and other applicable Specific Plans.

With regard to cumulative effects of utility-sized solar power generation facilities, there is a potential that outside factors—such as the development of newer technology, change in state or national policy that encourages the construction of such facilities, or other economic factors—could result in the abandonment of such facilities. Unlike other facilities that, once constructed, can be retrofitted and utilized for another specific use, solar power generation facilities have little opportunity for other uses should the site not be in operation. The potential for the cumulative effects caused by the abandonment of multiple solar facilities in Kern County could result in impacts on surrounding land uses should it be determined that these facilities are no longer viable commercial operations. Therefore, a mitigation measure related to the decommissioning of project facilities on land under the jurisdiction of Kern County has been included to establish safeguards to ensure the maintenance of the health, safety, and welfare of the citizens of the county. While it is the intent of Kern County to promote the use of an alternative to fossil-fuel-generated electrical power in areas of the county that are identified to have suitable characteristics for production of commercial quantities of solar PV-generated electrical power, it is necessary to protect surrounding landowners from potential impacts associated with the abandonment of such facilities. Implementation of Mitigation Measure MM 3.11-1a for the solar facility portion of the site and Mitigation Measure MM 3.11-1b for the gen-tie portion of the site, both discuss the requirements of a decommissioning plan to ensure the maintenance of health, safety and welfare of the citizens of the county in the event the solar facility ends operation.

The anticipated project impacts in conjunction with cumulative development in the project area would result in the loss of open space within the Antelope Valley. Potential land use impacts require evaluation on a case-by-case basis, such as land use compatibility impacts, which are the interactive effects of a specific development and its immediate environment. The proposed project is located among other approved solar projects that take advantage of a recently upgraded transmission system that was built for the purpose of interconnecting renewable energy projects within the region. However, as discussed above, the proposed project would maintain consistency with the goals and policies of the Kern County General Plan. In addition, with approval of all discretionary requests, the proposed project would be an allowable use that would not conflict with the land use

or zoning classification for the sites. Therefore, the proposed project would not have a cumulatively considerable impact regarding land use.

Mitigation Measures

Implement Mitigation Measure MM 3.11-1a and Mitigation Measure MM 3.11-1b (see Section 3.11.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be less than significant.

3.11.5 Mitigation Measures

3.11.5.1 Solar Facility Mitigation Measures

MM 3.11-1a: Decommission Plan. Except as otherwise agreed to in writing by the Government, Lessee shall, at no cost to the Government:

1. Remove all of the Improvements from the Leased Premises. Lessee shall restore the Leased Premises to a condition substantially similar to that which existed on the Effective Date of the Lease, including but not limited to re-establishment (if applicable) vegetation to control erosion in accordance with Government standards.
2. No later than 3 years prior to the Restoration Deadline, Lessee shall provide to the Government a report prepared by a construction and demolition expert reasonably acceptable to the Government, which report details and estimates the cost of satisfying the Removal and Restoration Obligation (the "Estimated Restoration Costs"), together with a written plan which sets forth how Lessee proposes to discharge its Removal and Restoration Obligation (an "Improvement Removal Report") and establish an escrow account with a commercial escrow holder reasonably satisfactory to the Government and deposit into it the full amount of the Estimated Restoration Costs ("Demolition Reserve Account").
    a. The Demolition Reserve Account shall be subject to procedures and controls to be set forth in a written agreement between Lessee, the Government and the escrow holder ("Demolition Reserve Escrow Agreement").
    b. If Lessee does not satisfy its Removal and Restoration Obligation on or before the Restoration Deadline ("Restoration Default"), the Government shall be entitled, in addition to other available remedies, to (i) take ownership of the Lessee Improvements without compensation therefore, or (ii) cause the Lessee Improvements to be removed or destroyed, and the Leased Premises to be restored at the expense of Lessee.

3.11.5.2 Gen-tie Mitigation Measures

MM 3.11-1b: Decommission Plan. Prior to issuance of any building permit, the project proponent shall provide the Kern County Planning and Natural Resources Department with a Decommission Plan for review and approval. The plan would be carried out by the proponent or a County-contracted consulting firm(s) at a cost to be borne by the project proponent.

1. The Decommission Plan including, but not limited to the following:

a. Factor in the cost to remove the gen-tie lines and other support structures, replace any disturbed soil from the removal of support structures (including all underground equipment), and control of fugitive dust on the remaining undeveloped land.

b. Salvage value for the support structures shall be included in the financial assurance calculations.

c. The assumption, when preparing the estimate, is that the project proponent is incapable of performing the work or has abandoned the gen-tie lines, thereby resulting in the County hiring an independent contractor to perform the decommission work.

2. In addition to submittal of a Decommission Plan for the gen-tie lines, the project proponent shall post or establish and maintain with the County financial assurances related to the deconstruction of the gen-tie sites as identified on the approved Decommission Plan should at any point in time the project proponent determine it is not in their best interest to operate the facility. The financial assurance required prior to issuance of any building permit shall be established using one of the following:

a. An irrevocable letter of credit.

b. A surety bond.

c. A trust fund in accordance with the approved financial assurances to guarantee the deconstruction work will be completed in accordance with the approved decommission plan.

3. The financial assurances documents shall include the following verbiage, including any required verbiage through Kern County Planning and Natural Resources Department's consultation and review with Kern County Counsel:

d. Financial institution or Surety Company shall give the County a minimum of 120 days' notice of intent to terminate the letter of credit or bond.

e. Financial assurances shall be reviewed annually by the respective counties or County-contracted consulting firm(s) at a cost to be borne by the project proponent to substantiate those adequate funds exist to ensure deconstruction of all gen-tie lines and support structures identified on the approved Decommission Plan.

f. Should the project proponent deconstruct the site on their own, the County will not pursue forfeiture of the financial assurance.

g. Financial institution or Surety Company shall be licensed to conduct business in the state of California.

4. Once deconstruction has occurred, financial assurance for that portion of the site will no longer be required and any financial assurance posted will be adjusted or returned accordingly. Any funds not utilized through decommission of the site by the County shall be returned to the project proponent.

5. Should any portion of the generation tie-line poles not be in operational condition for a consecutive period of 24 months, that portion of the site shall be deemed abandoned and shall be removed within 60 days from the date a written notice is sent to the property owner and solar field owner, as well as the project proponent, by the County. Within this 60-day period, the property owner, solar field owner, or project proponent may provide the County a written request and justification for an extension for an additional 12 months. The Kern County Planning and Natural Resources Director shall consider any such request at a Director's Hearing as provided for in Section 19.102.070 of the Kern County Zoning Ordinance.

6. In no case shall a generation tie-line pole which has been deemed abandoned be permitted to remain in place for more than 48 months from the date the solar facility was first deemed abandoned.

3.11.6 Residual Impacts after Mitigation

The Decommissioning Financial Plan will establish safeguards to ensure the maintenance of the health, safety, and welfare of the citizens of the county. No residual impacts after mitigation are anticipated.

3.11.7 Project Consistency with Applicable Plans

Table 3.11-3 summarizes the consistency of the proposed project with all applicable goals and policies of the Kern County General Plan, the Mojave Specific Plan, the South Mojave Elephant Butte Specific Plan, the West Edwards Road Settlement Specific Plan, Actis Interim Rural Community Plan Map, and relevant planning documents that are applicable to the proposed project sites.

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
Kern County General Plan		
1.3 Physical and Environmental Constraints		
Policy 2 In order to minimize risk to Kern County residents and their property, new development will not be permitted in hazard areas in the absence of implementing ordinances and programs. These ordinances will establish conditions, criteria and standards for the approval of development in hazard areas.	Consistent	Consistent with this policy, the proposed project would develop a solar PV power-generating facility that is not located on a hazardous site. Final review of the proposed project by the Kern County Planning and Community Development Department, as well as adherence to all applicable local, state, and federal regulations, would ensure that the proposed project would not pose significant environmental or public health and safety hazards.
Policy 3 Zoning and other land use controls will be used to regulate and, in some instances, to prohibit development in hazardous areas.	Consistent	See 1.3, Physical and Environmental Constraints, Policy 2, above.
Policy 8 Encourage the preservation of the floodplain's flow conveyance capacity, especially in floodways, to be open space/passive recreation areas throughout the County.	Consistent	Hydrology impacts are evaluated in Section 3.17, *Hydrology and Water Quality*. The proposed project would be designed to avoid existing drainage patterns, and drainage facilities installed near the solar panels would be designed to allow surface water flows to pass through the project site. The gen-tie line would either be positioned above or below ground surface and not in the path of flood flows. The Final Hydrology Report would include final designs of the proposed retention basins, which would impede and redirect flood flows as they would be sized to capture the predicted increase in runoff post-construction and release it at a location and rate similar to existing conditions.
Policy 10 The County will allow lands which are within flood hazard areas, other than primary floodplains, to be developed in accordance with the General Plan and Floodplain Management Ordinance, if mitigation measures are incorporated so as to ensure that the proposed development will not be hazardous within the requirements of the Safety Element (Chapter 4) of the General Plan.	Consistent	The entire portion of the project site located on Edwards AFB is located in Flood Zone D, which is defined as an area with possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. Lands adjacent to the Edwards AFB have a Zone A flooding hazard that seems to carry onto the site into Edwards AFB. Zone A is defined as an area with a 1 percent change of annual flooding. Flow velocities across the project site are very low due to its relative flatness. Because the proposed project would be designed to allow surface water flows to pass through the project site, and the gen-tie line would be positioned either above or below ground surface and not in the path of flood flows, the project would not increase the potential for flooding beyond existing conditions. The proposed project would use mapped flood zones, and the construction and decommissioning laydown areas would be located to avoid flood zones. No adverse impacts related to flood zones are expected. Further, the project would be developed in accordance with the General Plan and Floodplain Management Ordinance.

TABLE 3.11-3
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Policies	Consistency Determination	Project Consistency
1.4 Public Services and Facilities		
Goal 1 Kern County residents and businesses should receive adequate and cost effective public services and facilities. The County will compare new urban development proposals and land use changes to the required public services and facilities needed for the proposed project.	Consistent with implementation of Mitigation Measures MM 3.13-1a, MM 3.9-6a, MM 3.13-1b, and MM 3.9-8b.	As discussed in Section 3.13, *Public Services*, the project would be required to pay a fee assigned by the Kern County Planning and Community Development Department over the life of the proposed facilities in order to mitigate any potential impacts to fire or police protection services resulting from the proposed project. With payment of the required mitigation fee as assessed by the Kern County Planning and Community Development Department, any additional fire or police protection services, facilities or personnel required as a result of the proposed project would be appropriately funded.
Policy 1 New discretionary development will be required to pay its proportional share of the local costs of infrastructure improvements required to service such development.	Consistent	Impacts to utilities are evaluated in Section 3.11, *Infrastructure*. No sewage or disposal connections to the Edwards AFB sewer system or a municipal sewer system would be implemented. This EIS/EIR serves to comply with this policy, and the proposed project would pay a fair share of any infrastructure improvements required.
1.9 Resource		
Goal 3 Ensure the development of resource areas minimize effects on neighboring resource lands.	Consistent	The gen-tie line would be compatible with open space and other resource management land uses, and would be designed to minimize effects on neighboring lands.
Goal 4 Encourage safe and orderly energy development within the County, including research and demonstration projects, and to become actively involved in the decision and actions of other agencies as they affect energy development in Kern County.	Consistent	Consistent with this policy, the proposed project would develop a solar PV power-generating facility designed to produce greater than 100 MW. The project would develop a clean energy source that would create fewer fossil fuel emissions, thus protecting the environment. Final review of the proposed project by the Kern County Planning and Community Development Department, as well as adherence to all applicable local, state, and federal regulations, would ensure that the proposed project would not pose significant environmental or public health and safety hazards.
Goal 6 Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment.	Consistent	Consistent with this policy, the proposed project is the development of a solar PV power-generating facility designed to produce greater than 200 MW of solar power. The project would develop a clean energy source that would create fewer fossil fuel emissions, thus protecting the environment.
Policy 1 Appropriate resource uses of all types will be encouraged as desirable and consistent interim uses in undeveloped portions of the County regardless of General Plan designation.	Consistent	Impacts on natural resources are avoided or minimized through the design of the project and would not affect long-term use of the site. The project implements the General Plan policy of maximizing utilization of available solar resources.

TABLE 3.11-3
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Policies	Consistency Determination	Project Consistency
Policy 3 The County will support programs and policies that provide tax and economic incentives to ensure the long-term retention of agriculture, timber, and other resource lands.	Consistent	The gen-tie line is compatible with open space and other resource management land uses and is not expected to diminish the ability of adjacent lands to support agricultural or other resource uses.
Policy 8 Provide for the orderly expansion of new urban-scale infrastructure and development and the creation of new urban-scale centers in a manner that minimizes adverse effects on agriculture and natural resource uses.	Consistent	The gen-tie line would be placed on undeveloped land and within existing roadways and would not compromise natural resource uses. The project is consistent with this policy because it promotes the preservation and use of available natural resources.
Policy 16 The County will encourage development of alternative energy sources by tailoring its Zoning and Subdivision Ordinances and building standards to reflect Alternative Energy Guidelines published by the California State Energy Commission.	Consistent	The project proposes the development of a PV power-generating facility designed to produce greater than 100 MW of solar power. Consistent with this policy, the proposed project would generate solar energy and offset an equivalent amount of fossil fuel-generated electrical power.
Policy 19 Work with other agencies to define regulatory responsibility concerning energy-related issues.	Consistent	The project would not prevent the ability of the County to work with other agencies to define energy-related issues.
1.10 General Provisions		
1.10.1 Public Services and Facilities		
Policy 9 New development should pay its pro rata share of the local cost of expansions in services, facilities, and infrastructure which it generates and upon which it is dependent.	Consistent with implementation of Mitigation Measures MM 3.13-1a, MM 3.9-6a, MM 3.13-1b, and MM 3.9-8b.	See 1.4, Public Facilities and Services, Goal 1, above. Public service impacts are evaluated in Section 3.13, *Public Services*. This EIS/EIR serves to comply with this policy.
Policy 15 Prior to approval of any discretionary permit, the County shall make the finding, based on information provided by the California Environmental Quality Act documents, staff analysis, and the operator, that adequate public or private services and resources are available to serve the proposed development.	Consistent	See 1.4, Public Facilities and Services, Goal 1, above. Public service impacts are evaluated in Section 3.13, *Public Services*. This EIS/EIR serves to comply with this policy.

TABLE 3.11-3
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Policies	Consistency Determination	Project Consistency
Policy 16 The developer shall assume full responsibility for costs incurred in service extension or improvements that are required to serve the project. Cost sharing or other forms of recovery shall be available when the service extensions or improvements have a specific quantifiable regional significance.	Consistent with implementation of Mitigation Measures MM 3.13-1a, MM 3.9-6a, MM 3.13-1b, and MM 3.9-8b.	See 1.4, Public Facilities and Services, Goal 1, above. Public service impacts are evaluated in Section 3.13, *Public Services*. This EIS/EIR serves to comply with this policy.
1.10.2 Air Quality		
Policy 19 In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decision making body, as part of its deliberations, will ensure that: a. All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and b. The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the California Environmental Quality Act.	Consistent with implementation of Mitigation Measures MM 3.3-1a to MM 3.3-9a and MM 3.3-1b to MM 3.3-6b.	Air quality impacts are evaluated in Section 3.3, *Air Quality*. This EIS/EIR serves to comply with this policy. The proposed project would implement feasible Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project, in order to further reduce emission during construction and operation. Prior to consideration by the Kern County Planning Commission and Board of Supervisors, the significant and unavoidable cumulative air quality impacts identified in Section 3.3, *Air Quality*, will be discussed in a statement of overriding considerations pursuant to Sections 15043 and 15093 of the CEQA Guidelines.
Policy 21 The County shall support air districts' efforts to reduce PM_{10} and $PM_{2.5}$ emissions.	Consistent with implementation of Mitigation Measures MM 3.3-1 to 3.3-4	Air quality impacts are evaluated in Section 3.3, *Air Quality*. As discussed in that section, implementation of Mitigation Measures MM 3.3-1a through 3.3-9a for the solar facility portion of the project and MM 3.3-1b through 3.3-6b for the gen-tie portion of the project, would further reduce PM_{10} and $PM_{2.5}$ emissions during construction and operation.
1.10.3 Archaeological, Paleontological, Cultural, and Historical Preservation		
Policy 25 The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.	Consistent with implementation of Mitigation Measures MM 3.6-1a to MM 3.6-11a and MM 3.6-1b to MM 3.6-8b.	Cultural resource impacts are evaluated in Section 3.6, *Cultural and Paleontological Resources*. This EIS/EIR serves to comply with this policy with mitigation measures to promote the preservation of cultural and historic resources where necessary.

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Policies	Consistency Determination	Project Consistency
1.10.5 Threatened and Endangered Species		
Policy 27 Threatened or endangered plant and wildlife species should be protected in accordance with state and federal laws.	Consistent with implementation of Mitigation Measures MM 3.5-1a to MM 3.5-13a and MM 3.5-1b to MM 3.5-15b.	Biological resource impacts are evaluated in Section 3.5, *Biological Resources*. This EIS/EIR serves to comply with this policy and reduce potential impacts with mitigation. Additionally, the proposed project would be developed and operated in accordance with all local, state and federal laws pertaining to the preservation of sensitive species.
Policy 28 County should work closely with state and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.	Consistent with implementation of Mitigation Measures MM 3.5-1a to MM 3.5-13a and MM 3.5-1b to MM 3.5-15b.	Biological Resource impacts are evaluated in Section 3.5, *Biological Resources*. This EIS/EIR serves to comply with this policy and reduce potential impacts with mitigation. As part of the biological resources evaluation and habitat assessment conducted for the proposed project, relevant state and federal agencies were contacted to ensure that appropriate information about the project sites were being gathered. Specifically, the NOP was sent to state and federal agencies requesting their input on the biological resource evaluation. Similarly, this EIS/EIR will also be circulated to these agencies, and staff will have the opportunity to comment on the biological resources evaluation. Therefore, the County is complying with this policy for the proposed project.
Policy 31 Under the provisions of the California Environmental Quality Act, the County, as lead agency, will solicit comments from the California Department of Fish and Game* and the U.S. Fish and Wildlife Service when an environmental document is prepared.	Consistent with implementation of Mitigation Measures MM 3.5-1a to MM 3.5-13a and MM 3.5-1b to MM 3.5-15b.	Solicitation to CDFW and U.S. Fish and Wildlife Service is discussed in Section 3.5, *Biological Resources*. This EIS/EIR serves to comply with this policy.

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Policies	Consistency Determination	Project Consistency
Policy 32 Riparian areas will be managed in accordance with United States Army Corps of Engineers, and the California Department of Fish and Game* rules and regulations to enhance drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.	Consistent with implementation of Mitigation Measures MM 3.5-1a to MM 3.5-13a and MM 3.5-1b to MM 3.5-15b.	Section 3.5, *Biological Resources*, evaluates potential impacts to riparian habits. There is no riparian habitat located within the Alternative A site. Sensitive habitats present include Joshua tree woodlands and wildlife movement corridors, both of which may be directly and indirectly affected by the proposed project. However, should the CDFW or RWQCB determine that onsite water features are jurisdictional; Mitigation Measures MM 3.5-1a through MM 3.5-13a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b through 3.5-15b for the gen-tie portion of the project would serve to protect CDFW jurisdictional waters and otherwise sensitive habitats through biological monitoring, worker environmental awareness training and education, and avoidance of resources.
1.10.6 Surface Water and Groundwater		
Policy 43 Drainage shall conform to the Kern County Development Standards and the Grading Ordinance.	Consistent	Drainage plans and associated impacts are discussed in Section 3.17, *Hydrology and Water Quality*, of this EIS/EIR. Consistent with this policy, final designs of the project would be required to conform to the Kern County Development Standards and Grading Ordinance during construction and decommissioning. This would be confirmed during final plot plan review by the Kern County Planning and Community Development Department.
Policy 44 Discretionary projects shall analyze watershed impacts and mitigate for construction-related and urban pollutants, as well as alterations of flow patterns and introduction of impervious surfaces as required by the California Environmental Quality Act, to prevent the degradation of the watershed to the extent practical.	Consistent with implementation of Mitigation Measures MM 3.16-1a to MM 3.16-4a and MM 3.16-1b to MM 3.16-4b	Please refer to Section 3.17, *Hydrology and Water Quality*, for a complete discussion potential watershed impacts resulting from the proposed action.
1.10.7 Light and Glare		
Policy 47 Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.	Consistent with implementation of Mitigation Measures MM 3.1-1a and MM 3.1-1b.	Aesthetic impacts are evaluated in Section 3.1, *Aesthetics*. The proposed solar facility site would have no onsite lighting and none of the streets bordering the site have lighting. There is minimal offsite lighting beyond small fixtures for individual structures. Thus, with the implementation of Mitigation Measures MM 3.1-1a for the solar facility portion of the project site, and Mitigation Measure MM 3.1-1b for the gen-tie portion of the site, the proposed project is consistent with this policy.

TABLE 3.11-3
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Policies	Consistency Determination	Project Consistency
Policy 48 Encourage the use of low-glare lighting to minimize nighttime glare effects on neighboring properties.	Consistent with implementation of Mitigation Measures MM 3.1-1a and MM 3.1-1b.	See 1.10.7, Light and Glare, Policy 47, above. Light and glare are analyzed in Section 3.1, *Aesthetics*. This EIS/EIR serves to comply with this policy.
Chapter 2 Circulation Element		
2.5.2 Airport Land Use Compatibility Plan		
Goal 1 Plan for land uses that are compatible with public airport and military bases and mitigate encroachment issues.	Consistent	As discussed in the Kern County Airport Land Use Compatibility section (see Section 3.11.3.1), the project would comply with the ALUCP policies related to public airports and military bases.
Policy 2 To the extent legally allowable, prevent encroachment on public airport and military base operations from incompatible, unmitigated land uses.	Consistent	See 2.5.2 ALUCP Goal 1, above.
Chapter 3 Noise Element		
Goal 1 Ensure that residents of Kern County are protected from excessive noise and that moderate levels of noise are maintained.	Consistent with implementation of Mitigation Measures MM 3.12-1a and MM 3.12-1b	Noise impacts, sensitive receptors and County thresholds are evaluated in Section 3.12, *Noise*. Due to the distance of Edwards AFB runways, the lack of habitable structures and the nearness of preexisting sensitive uses, the noise impacts of Edwards AFB on the proposed project site during construction would be minimal, During operation the project would have no impact on surrounding land uses.
Policy 1 Review discretionary industrial, commercial, or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses.	Consistent with implementation of Mitigation Measures MM 3.12-1a and MM 3.12-1b	See Chapter 3, Noise Element, Goal 1, above. Noise-sensitive land uses are evaluated in Section 3.12, *Noise*. This EIS/EIR serves to comply with this policy.
Policy 2 Require noise level criteria applied to all categories of land uses to be consistent with the recommendations of the California Division of Occupational Safety and Health.	Consistent with implementation of Mitigation Measures MM 3.12-1a and MM 3.12-1b	See Chapter 3, Noise Element, Goal 1, above. Noise level criteria for all land uses are evaluated in Section 3.12, *Noise*. This EIR serves to comply with this policy.

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
Policy 4 Utilize good land use planning principles to reduce conflicts related to noise emissions.	Consistent with implementation of Mitigation Measures MM 3.12-1a and MM 3.12-1b	Noise impacts, sensitive receptors, and County thresholds are evaluated in Section 3.12, *Noise*. Due to the distance of Edwards AFB runways, the lack of habitable structures at the solar facility site and the nearness of existing sensitive uses, the noise impacts of Edwards AFB on the proposed project site would be minimal. With implementation of Mitigation Measure MM 3.12-1, cumulative impacts related to excessive noise levels would not be substantial enough to disrupt or otherwise adversely affect sensitive receptors. The project would not conflict with surrounding land uses.
Policy 5 Prohibit new noise-sensitive land uses in noise-impacted areas unless effective mitigation measures are incorporated into the project design. Such mitigation shall be designed to reduce noise to the following levels: a. 65 dB-Ldn or less in outdoor activity areas. b. 45 dB-Ldn or less within living spaces or other noise sensitive interior spaces.	Consistent with implementation of Mitigation Measures MM 3.12-1a and MM 3.12-1b	See Chapter 3, Noise Element, Goal 1, above. Noise levels are evaluated in Section 3.12, *Noise*. The project is not a noise-sensitive land use. See the Project Consistency discussion under Policy 4. This EIS/EIR serves to comply with this policy.
Policy 7 Employ the best available methods of noise control.	Consistent with implementation of Mitigation Measures MM 3.12-1a, MM 3.12-2a, MM 3.12-1b, and MM 3.12-2b	See Chapter 3, Noise Element, Goal 1, above. Noise control methods are discussed in Section 3.12, *Noise*.
Chapter 4 Safety Element		
Goal 1 Minimize injuries and loss of life and reduce property damage.	Consistent	Consistent with this goal, the proposed project would be required to comply with adopted safety regulations, such as the Fire Code, and related policies in the General Plan as discussed in Section 3.9, Hazardous Materials and Safety.
Policy 1 Require discretionary projects to assess impacts on emergency services and facilities.	Consistent	Impacts on emergency services and facilities are discussed in Section 3.13, *Public Services*.

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
Policy 2 The County will encourage the promotion of public education about fire safety at home and in the work place.	Consistent with implementation of Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.9-8a, and MM 3.9-8b	The proposed project would not interfere or prohibit the County's ability to meet this policy. See Section 3.9, *Hazardous Materials and Safety*, MM 3.9-1a for the solar facility portion of the project and MM 3.9-1b for the gen-tie portion of the project, requires the operator to develop a hazardous materials business plan which would establish public notification procedures for spills and other emergencies, including fire. Mitigation Measures MM 3.9-8a for the solar facility portion of the project and MM 3.9-6b for the gen-tie portion of the project, requires the developer to post fire rules on the project bulletin board at the contractor's field office and areas visible to employees.
Policy 3 The County will encourage the promotion of fire prevention methods to reduce service protection costs and costs to taxpayers.	Consistent with implementation of the Kern County Wildland Fire Management Plan, Section 3.11.5.1, and Mitigation Measures MM 3.13-1a, MM 3.9-6a, MM 3.13-1b, and MM 3.9-8b.	See Section 3.9, *Hazardous Materials and Safety*. The Kern County Wildland Fire Management Plan documents the assessment of wildland fire situations throughout the State Responsibility Areas within the County. As discussed in Section 3.11.5.1, the proposed solar facility and gen-tie line would be constructed outside of any areas identified as High or Very High Severity Fire Severity Zones. All project components would be located within a Moderate Fire Hazard Severity Zone as identified by the CAL FIRE State and Local Responsibility Maps. Moderate zones are typically wildland supporting areas of low fire frequency and relatively modest fire behavior. The proposed project would comply with all applicable wildland fire management plans and policies established by CAL FIRE and the Kern County Fire Department See Section 3.13, *Public Services:* Mitigation Measure MM 3.13-1 outlines a methodology to reduce impacts to public services, including the responsibility of the developer to pay for impacts to fire services. Mitigation Measure MM 3.13-2 requires the developer to develop and implement a fire safety plan for use during construction and operation.
Policy 4 Ensure that new development of properties have sufficient access for emergency vehicles and for the evacuation of residents.	Consistent with implementation of Mitigation Measures MM 3.9-8a, 3.9-6b, and Impact 3.15-4	The project would comply with all applicable wildland fire management plans and policies. See Section 3.9, *Hazardous Materials and Safety:* Mitigation Measure MM 3.9-8a for the solar facility portion of the project and Mitigation Measure MM 3.9-6b for the gen-tie portion of the project, requires the developer to develop and implement a fire safety plan, including maps of the project site and access roads, for use during constructional operation. See Section 3.15, *Transportation*: Impact 3.15-4: the project site is located in a rural area with roadways allowing adequate egress/ingress to the site in the event of an emergency. As part of the proposed project, additional internal access roads would be constructed.

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
Policy 5 Require that all roads in wildland fire areas are well marked, and that homes have addresses prominently displayed.	Consistent with implementation of Mitigation Measures MM 3.9-8a and MM 3.9-6b	See Section 3.9, *Hazardous Materials and Safety:* as discussed in Mitigation Measure MM 3.9-8a for the solar facility portion of the project and Mitigation Measure MM 3.9-6b for the gen-tie portion of the project, the developer would develop and implement a fire safety plan for use during construction and operation. This plan would address the marking of roads, and would comply with the General Plan.
Policy 6 All discretionary projects shall comply with the adopted Fire Code and the requirements of the Fire Department.	Consistent with implementation of Mitigation Measures MM 3.13-1a, MM 3.13-1b, MM 3.9-8a, and MM 3.9-6b	See Section 3.9, *Hazardous Materials and Safety*, and Section 3.13, *Public Services*. Consistent with this policy, the proposed project would be required to comply with the adopted Fire Code and the requirements of the Kern County Fire Department as outlined in Mitigation Measures MM 3.13-1a for the solar facility portion of the project and MM 3.13-1b for the gen-tie portion of the project. As discussed in Mitigation Measure MM 3.9-8a for the solar facility portion of the project and Mitigation Measure MM 3.9-6b for the gen-tie portion of the project, the developer is required to submit a fire safety plan to the Kern County Fire Department for review and approval prior to the issuance of any building permit or grading permits.
Chapter 5 Energy Element		
5.4.5 Solar Energy Development		
Goal 1 Encourage safe and orderly commercial solar development.	Consistent	Consistent with this goal, the proposed project would develop a solar PV facility that would generate greater than 100 MW of solar energy. The project would be located on undeveloped land and near existing roadways. The location of the project would ensure a safe and orderly development of the solar facility and gen-tie line.
Policy 1 The County shall encourage domestic and commercial solar energy uses to conserve fossil fuels and improve air quality.	Consistent	Consistent with this policy, the proposed project would develop a solar PV facility capable of generating greater than 100 MW of solar energy and offset an equivalent amount of fossil fuel-generated electrical power in the desert region of Kern County.
Policy 3 The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.	Consistent	Consistent with this policy, the project proposes the development of a PV power-generating facility in the desert region of Kern County. Final review of the proposed project by the Kern County Planning and Community Development Department, as well as adherence to all applicable local, state, and federal regulations, would ensure that the proposed project would not pose significant environmental or public health and safety hazards. See Section 3.9, *Hazardous Materials and Safety.*

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
Policy 4 The County shall encourage solar development in the desert and valley regions previously disturbed, and discourage the development of energy projects on undisturbed land supporting state or federally protected plant and wildlife species.	Consistent with implementation of Mitigation Measures MM 3.5-1a to MM 3.5-13a and MM 3.5-1b to MM 3.5-15b.	Consistent with this policy, the project proposes the development of a PV power generation facility in the desert region of Kern County. As discussed in Section 3.5, *Biological Resources*, potential impacts to biological resources could be reduced to less than significant levels with implementation of mitigation.
5.4.7 Transmission Lines		
Goal 1 To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effects.	Consistent	During final review of the proposed project, the Kern County Planning and Community Development Department, will determine which of the proposed gen-tie route options would minimize potential adverse environmental effect. The proposed gen-tie route options adhere to all applicable local, state, and federal regulations.
Policy 1 The County should encourage the development and upgrading of transmission lines and associated facilities (e.g., substations) as needed to serve Kern County's residents and access the County's generating resources, insofar as transmission lines do not create significant environmental or public health and safety hazards.	Consistent	The proposed project would develop a PV facility that would develop new transmission lines and access the County's generating resources. Final review of the proposed project by the Kern County Planning and Community Development Department, as well as adherence to all applicable local, state, and federal regulations, would ensure that the proposed project would not pose significant environmental or public health and safety hazards.
Policy 2 The County shall review all proposed transmission lines and their alignments for conformity with the Land Use, Conservation, and Open Space Element of this General Plan.	Consistent	See 5.4.7, Transmission Lines, Policy 1, above.
Policy 3 In reviewing proposals for new transmission lines and/or capacity, the County should assert a preference for upgrade of existing lines and use of existing corridors where feasible.	Consistent	See 5.4.7, Transmission Lines, Policy 1, above.
Policy 4 The County should work with other agencies in establishing routes for proposed transmission lines.	Consistent	Consistent with this policy, the proposed project would require coordination with SCE and/or LADWP to connect into existing facilities.

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
Policy 5 The County should discourage the siting of above-ground transmission lines in visually sensitive areas.	Consistent	See 5.4.7, Transmission Lines, Policy 1, above. The proposed project includes gen-tie lines that would have a significant impact on visual resources within the project area. As evaluated in 3.1, *Aesthetics,* there are several impacts to visually sensitive areas KOPs 1-3. However, during final review of the proposed project, the Kern County Planning and Natural Resources Department, would determine which of the proposed gen-tie route options would minimize potential adverse environmental effects including within visually sensitive areas. This would allow the County to discourage the siting of transmission lines in visually sensitive areas as feasible.
Mojave Specific Plan (where goals and policies differ substantively from the Kern County General Plan)		
Chapter 3 Land Use Element		
Policy 3.6.5: Ensure that future electricity demand projections for the Mojave area account for increases proposed in the Specific Plan, and work with Southern California Edison to modify and improve the electric power delivery system as the area grows.	Consistent	Consistent with this policy, the project proposes the development of a PV power-generating facility and would require coordination with SCE.
Chapter 4 Conservation Element		
Policy 4.4.4: Encourage the preservation of Joshua trees, Joshua tree woodland, known wildflower displays or other biologically sensitive flora determined during biological surveys.	Consistent (Mitigation Measures MM 3.5-4a, MM 3.5-13a, MM 3.5-14b and MM 3.5-15b)	The proposed project construction would have a less than significant impact on Joshua trees and Joshua tree woodland with implementation of Mitigation Measure MM 3.5-4a Vegetation Salvage Plan, and MM 3.5-13a for the Solar Facility portion of the site, as well as MM 3.5-14b and MM 3.15b for the gen-tie portion of the project.
South of Mojave-Elephant Butte Specific Plan (where goals and policies differ substantively from the Kern County General Plan)		
A. Land Use Element		
3. Industry: Compliance with the requirements of the California Health and Safety Code and the Kern County Health Department with regard to extraction and processing mineral resources (noise and air quality) or cessation of such operations (covering or fencing of openings).	Consistent	There are active mines and petroleum facilities located near the project site; however, the proposed project would not interfere with nearby mineral extraction operations and would not result in the loss of land designated for mineral resources.

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
4. Open Space: The Public Lands (BLM) surrounding and within the Plan area provide existing open space. This land should be retained in public ownership in perpetuity. All existing drainage channels should be left in a natural state, except in areas where existing residential lots would be subject to inundation, and retained as permanent open space. The city of Los Angeles transmission line should be jointly utilized as open space in accordance with the requirements of the city of Los Angeles. All private lands with a natural grade cross slope of 40 percent or greater should be preserved as open space until provisions have been made to completely sewer such private lands.	Consistent	While the proposed project would result in loss of open space, it does not include the use of BLM land or open space surrounding the city of Los Angeles transmission lines or private lands with a natural grade cross sloped 40 percent or greater. The project would maintain consistency with the goals and policies of the Kern County General Plan and related Specific Plans.
5. Agricultural: Compliance with existing Zoning Ordinance	Consistent	Consistent with this policy, the proposed project does not conflict with agricultural zoning.
E. Open Space		
4. Scenic Lands: All possible safeguards should be made to protect the scenic lands along SR 14, designated as a proposed Scenic Highway, and other County Highways.	Consistent with implementation of Mitigation Measures MM 3.1-1a to MM 3.1-3a and MM 3.1-1b to MM 3.1-3b.	The gen-tie line would cross over State Route (SR) 14 and would be visible to residences and motorists. The portion of SR 14 that is eligible for scenic highway designation is between Mojave and the intersection of US 395, which is located approximately 4 miles north of the solar facility site and 2.8 miles east of the easternmost gen-tie route option. Additionally, the portion of SR 58 eligible for scenic highway status is between the intersection of SR 14 and I-15 near Barstow and approximately 3.2 miles north of the gen-tie route options. With implementation of Mitigation Measures MM 3.1-1a to MM 3.1-3a for the solar facility portion of the project and Mitigation Measures MM 3.1-1b to MM 3.1-3b for the gen-tie portion of the project, the proposed project would maintain consistency with goals and policies of the Kern County General Plan and related specific plans.
West Edwards Road Settlement Specific Plan (where goals and policies differ substantively from the Kern County General Plan)		
Land Use, Open Space, and Conservation Element		
Goal 1.6.1: Promote conservation of the natural resources within the West Edwards Road Settlement (WERS) area.	Consistent	The project proposes the development of a PV power-generating facility designed to produce greater than 100 MW of solar power. The proposed gen-tie line would be constructed within the WERS area with no impact to natural resources.
Policy 2: Preservation of Lookout Hill from any development will be encouraged.	Consistent	The proposed project does not include development of Lookout Hill.

TABLE 3.11-3
CONSISTENCY ANALYSIS WITH THE KERN COUNTY GENERAL PLAN, THE MOJAVE SPECIFIC PLAN, THE SOUTH OF MOJAVE-ELEPHANT BUTTE SPECIFIC PLAN, THE WEST EDWARDS ROAD SETTLEMENT SPECIFIC PLAN, AND THE ACTIS INTERIM RURAL SPECIFIC PLAN MAP COMMUNITY PLAN GOALS AND POLICIES FOR LAND USE

Policies	Consistency Determination	Project Consistency
Safety Element		
Policy 9: Should any area within WERS be exposed to a noise level of 65 dB or greater, it should be designated as a noise sensitive area.	Consistent	Noise levels are evaluated in Section 3.12, *Noise*. Due to the distance of Edwards AFB runways, the lack of habitable structures and the nearness of preexisting sensitive uses, the noise impacts to WERS on the proposed project site during construction would be minimal, During operation the project would have no impact on surrounding land uses.
Actis Interim Rural Specific Plan Map (where goals and policies differ substantively from the Kern County General Plan)		
No applicable policies.		

3.12 Noise

3.12.1 Affected Environment

This section of the EIS/EIR describes the affected environment for noise in the proposed project area, including the regulatory and environmental setting.

The analysis in this section is based on the Acoustical Assessment for the Oro Verde Solar Project, prepared by RBF Consulting, dated December 3, 2013, the Noise Assessment Technical Report for the Gen-Tie Routes for Edwards Air Force Base (AFB) Solar Enhanced Use Lease (EUL) Project, prepared by Dudek, dated October 2017 and the Edwards Air Force Base Solar Project Update to Ambient Noise Measurements Memorandum, prepared by Dudek, dated February 16, 2018, which are provided in Appendix J of this EIS/EIR.

3.12.1.1 Scoping Issues Addressed

No comments related to noise were received.

3.12.1.2 Noise Background and Terminology

Acoustical Terminology

An understanding of the physical characteristics of sound is useful for evaluating environmental noise from the proposed project. This discussion considers the methods and metrics used to quantify noise exposure, human response, and relative judgment of loudness, and noise levels of common noise environments are presented.

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and interferes with or disrupts normal activities. The effects of noise on people can be grouped into four general categories:

- Subjective effects (dissatisfaction, annoyance);
- Interference effects (communication, sleep, and learning interference);
- Physiological effects (startle response); and
- Physical effects (hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. The subjective responses of individuals to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, its appropriateness to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities, such as normal conversations, watching

television, and telephone conversations, and interference with sleep. Sleep interference effects can include both awakening from sleep and arousal to a lesser state of sleep.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and amplitude. Frequency describes the sound's pitch (tone) and is measured in cycles per second (Hertz [Hz]), while amplitude describes the sound's pressure (loudness). Because the range of sound pressures that occur in the environment is extremely wide, it is convenient to express these pressures on a logarithmic scale that compresses the wide range of pressures into a more useful range of numbers. The standard unit of sound measurement is the decibel (dB). Hz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a given number of times per second. If the drum vibrates 100 times per second, it generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived by the ear/brain as a tonal pitch of 100 Hz. Sound frequencies between 20 and 20,000 Hz are within the range of sensitivity of the healthy human ear.

Sound levels are expressed by reference to a specified national/international standard. The sound pressure level is used to describe sound pressure (loudness) and is specified at a given distance or specific receptor location. In expressing sound pressure level on a logarithmic scale, sound pressure (dB) is referenced to a value of 20 micropascals (μPa). Sound pressure level depends not only on the power of the source but also on the distance from the source to the receiver and the acoustical characteristics of the sound propagation path (absorption, reflection, etc.).

Outdoor sound levels decrease logarithmically as the distance from the source increases. This decrease is due to wave divergence, atmospheric absorption, and ground attenuation. Sound radiating from a source in a homogeneous and undisturbed manner travels in spherical waves. As the sound waves travel away from the source, the sound energy is dispersed over a greater area, decreasing the sound pressure of the wave. Spherical spreading of the sound wave from a point source reduces the noise level at a rate of 6 dB per doubling of distance.

Atmospheric absorption also influences the sound levels received by an observer; the greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances greater than 1,000 feet. The degree of absorption varies depending on the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest (i.e., sound carries farther) at high humidity and high temperatures, and lower frequencies are less readily absorbed (i.e., sound carries farther) than higher frequencies. Over long distances, lower frequencies become dominant as the higher frequencies are more rapidly attenuated. Turbulence, gradients of wind, and other atmospheric phenomena also play a significant role in determining the degree of attenuation. For example, certain conditions, such as temperature inversions, can channel or focus the sound waves, resulting in higher noise levels than would result from simple spherical spreading.

Sound from a tuning fork contains a single frequency (a pure tone), but most sounds in the environment do not consist of a single frequency. Instead, they are a broad band of many

frequencies differing in sound level. Because of the broad range of audible frequencies, methods have been developed to quantify these values into a single number representative of human hearing. The most common method used to quantify environmental sounds consists of evaluating all frequencies of a sound according to a weighting system that is reflective of human hearing characteristics. Human hearing is less sensitive at low frequencies and extremely high frequencies than at the midrange frequencies. This process is termed "A weighting," and the resulting dB level is termed the "A-weighted" decibel (dBA).

Because A-weighting is designed to emulate the frequency response characteristics of the human ear and reflect the way people perceive sounds, it is widely used in local noise ordinances and state and federal guidelines, including those of the State of California and Kern County. Unless specifically noted, the use of A-weighting is always assumed with respect to environmental sound and community noise, even if the notation does not include the "A."

In terms of human perception, a sound level of 0 dBA is the threshold of human hearing and is barely audible by a healthy ear under extremely quiet listening conditions. This threshold is the reference level against which the amplitude of other sounds is compared. Normal speech has a sound level of 60 dBA. Sound levels above about 120 dBA begin to be felt inside the human ear as discomfort, progressing to pain at still higher levels. Humans are much better at discerning relative sound levels than absolute sound levels. The minimum change in the sound level of individual events that an average human ear can detect is about 1 to 3 dBA. A 3 to 5 dBA change is readily perceived. An increase (or decrease) in sound level of about 10 dBA is usually perceived by the average person as a doubling (or halving) of the sound's loudness.

Because of the logarithmic nature of the decibel, sound levels cannot be added or subtracted directly. However, some simple rules are useful in dealing with sound levels. First, if a sound's acoustical energy is doubled, the sound level increases by 3 dBA, regardless of the initial sound level (e.g., 60 dBA + 60 dBA = 63 dBA; 80 dBA + 80 dBA = 83 dBA). An increase of 10 dBA is required to double the perceived loudness of a sound, and a doubling or halving of the acoustical energy (a 3 dBA difference) is at the lower limit of readily perceived change.

Although dBA may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most ambient environmental noise includes a mixture of noise from nearby and distant sources that creates an ebb and flow of sound, including some identifiable sources plus a relatively steady background noise in which no particular source is identifiable. A single descriptor, termed the equivalent sound level (Leq), is used to describe sound that is constant or changing in level. Leq is the energy-mean dBA during a measured time interval. It is the "equivalent" sound level produced by a given constant source equal to the acoustic energy contained in the fluctuating sound level measured during the interval. In addition to the energy-average level, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum instantaneous (Lmax) and minimum instantaneous (Lmin) noise level indicators that represent the root-mean-square maximum and minimum noise levels measured during the monitoring interval. The Lmin value obtained for a particular monitoring location is often called the acoustic floor for that location.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L10, L50, and L90 may be used, which represent the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of the measured time interval, respectively. Sound levels associated with L10 typically describe transient or short-term events, L50 represents the median sound level during the measurement interval, and L90 levels are typically used to describe background noise conditions.

The Day-Night Average Sound Level (Ldn, or DNL) represents the average sound level for a 24-hour day and is calculated by adding a 10 dBA penalty to sound levels during the night period (10:00 p.m. to 7:00 a.m.). The Ldn is the descriptor of choice and used by nearly all federal, state, and local agencies throughout the United States to define acceptable land use compatibility with respect to noise. Within the state of California, the Community Noise Equivalent Level (CNEL) is sometimes used. CNEL is very similar to Ldn, except that an additional 5 dBA penalty is applied to the evening hours (7:00 p.m. to 10:00 p.m.). Because of the time-of-day penalties associated with the Ldn and CNEL descriptors, the Ldn or CNEL dBA value for a continuously operating sound source during a 24-hour period will be numerically greater than the dBA value of the 24-hour Leq. Thus, for a continuously operating noise source producing a constant noise level operating for periods of 24 hours or more, the Ldn will be 6 dBA higher than the 24-hour Leq value.

TABLE 3.12-1
COMMON NOISE METRICS

Unit of Measure		Description
dB	Decibel	Decibels, which are units for measuring the volume of sound, are measured on a logarithmic scale, representing points on a sharply rising curve. For example, 10 dB sounds are 10 times more intense than 1 dB sounds, and 20 dB sounds are 100 times more intense. A 10 dB increase in sound level is perceived by the human ear as a doubling of the loudness of the sound.
dBA	A-Weighted Decibel	A sound pressure level that has been weighted to quantitatively reduce the effect of high- and low-frequency noise. It was designed to approximate the response of the human ear to sound.
CNEL	Community Noise Equivalent Level	A metric representing the 24-hour average sound level that includes a 5 dBA penalty during relaxation hours (7 p.m. to 10 p.m.) and a 10 dBA penalty for sleeping hours (10 p.m. to 7 a.m.).
Ldn	Day-Night Average Noise	The 24-hour average sound level, expressed in a single decibel rating, for the period from midnight to midnight obtained after the addition of a 10 dBA penalty to sound levels for the periods between 10 p.m. and 7 a.m.
Leq	Equivalent Noise Level	The average acoustic energy content of noise for a stated period of time. The Leq of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The Leq may also be referred to as the average sound level.
Lmax	Maximum Noise Level	Lmax represents the maximum instantaneous noise level experienced during a given period of time. It reflects peak operating conditions and addresses the annoying aspects of intermittent noise.
Lmin	Minimum Noise Level	Lmin represents the minimum instantaneous noise level experienced during a given period of time. It reflects baseline operating conditions and is commonly referenced as the noise floor.
L1, L10, L50, L90	Percentile Noise Exceedance Levels	The A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1%, 10%, 50%, and 90% of a stated time period.

Fundamentals of Environmental Noise

Vibrations, traveling as waves through air from a source, exert a force perceived by the human ear as sound. Sound pressure level (referred to as sound level) is measured on a logarithmic scale in decibels (dB) that represent the fluctuation of air pressure above and below atmospheric pressure. Frequency, or pitch, is a physical characteristic of sound and is expressed in units of cycles per second or hertz. The normal frequency range of hearing for most people extends from about 20 to 20,000 Hz. The human ear is more sensitive to middle and high frequencies, especially when the noise levels are quieter. As noise levels get louder, the human ear starts to hear the frequency spectrum more evenly. To accommodate for this phenomenon, a weighting system to evaluate how loud a noise level is to a human was developed. The frequency weighting, called "A" weighting, is typically used for quieter noise levels, which de-emphasizes the low-frequency components of the sound in a manner similar to the response of a human ear. This A-weighted sound level is called the "noise level" and is referenced in units of dBA.

Since sound is measured on a logarithmic scale, a doubling of sound energy results in a 3 dBA increase in the noise level. Changes in a community noise level of less than 3 dBA are not typically noticed by the human ear (Caltrans, 1998). Changes from 3 to 5 dBA may be noticed by some individuals who are extremely sensitive to changes in noise. A 5 dBA increase is readily noticeable (EPA, 1974). The human ear perceives a 10 dBA increase in sound level as a doubling of the sound level (i.e., 65 dBA sounds twice as loud as 55 dBA to a human ear).

An individual's noise exposure occurs over a period of time; however, noise level is a measure of noise at a given instant in time. Community noise sources vary continuously, being the product of many noise sources at various distances, all of which constitute a relatively stable background or ambient noise environment. The background, or ambient, noise level gradually changes throughout a typical day, corresponding to distant noise sources such as traffic volume and changes in atmospheric conditions.

Noise levels are generally higher during the daytime and early evening when traffic (including airplanes), commercial, and industrial activity is the greatest. However, noise sources experienced during night-time hours when background levels are generally lower can be potentially more conspicuous and irritating to the receiver. In order to evaluate noise in a way that considers periodic fluctuations experienced throughout the day and night, a concept termed "community noise equivalent level" (CNEL) was developed, wherein noise measurements are weighted, added, and averaged over a 24-hour period to reflect magnitude, duration, frequency, and time of occurrence. A complete definition of CNEL is provided below.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (Leq), the minimum and maximum sound levels (Lmin and Lmax), percentile-exceeded sound levels (Lxx), the day-night sound level (Ldn), and the CNEL. Below are brief definitions of these measurements and other terminology used within this section.

- *Decibel (dB)* is a unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
- *A-weighted decibel (dBA)* is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- *Equivalent sound level (Leq)* is the constant level that, over a given time period, transmits the same amount of acoustic energy as the actual time-varying sound. Equivalent sound levels are the basis for both the Ldn and CNEL scales.
- *Maximum sound level (Lmax)* is the maximum sound level measured during the measurement period.
- *Minimum sound level (Lmin)* is the minimum sound level measured during the measurement period.
- *Percentile-exceeded sound level (Lxx)* is the sound level exceeded X% of a specific time period. L10 is the sound level exceeded 10% of the time.
- *Day-Night Average Sound Level (Ldn)* The County of Kern describes community noise levels in terms of the Ldn (as well as CNEL [see below]). The Ldn is a 24-hour average A-weighted sound level with a 10 dB penalty added to the nighttime hours from 10:00 p.m. to 7:00 a.m. The 10 dB penalty is applied to account for increased noise sensitivity during the nighttime hours.
- *Community Noise Equivalent Level (CNEL)* is the average equivalent A-weighted sound level during a 24-hour day. CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dB to the sound levels in the evening and 10 dB to the sound levels at night.

Exterior Noise Distance Attenuation

Noise sources are classified in two forms: (1) point sources, such as stationary equipment or a group of construction vehicles and equipment working within a spatially limited area at a given time; and (2) line sources, such as a roadway with a large number of pass-by sources (i.e., motor vehicles). Sound generated by a point source typically diminishes (i.e., attenuates) at a rate of 6.0 dBA for each doubling of distance from the source to the receptor at acoustically “hard” sites and at a rate of 7.5 dBA for each doubling of distance from source to receptor at acoustically “soft” sites. Sound generated by a line source (i.e., a roadway) typically attenuates at a rate of 3 dBA and 4.5 dBA per doubling distance, for hard and soft sites, respectively. Sound levels can also be attenuated by human-made or natural barriers. For the purpose of a sound attenuation discussion, a “hard” or reflective site does not provide any excess ground-effect attenuation and is characteristic of asphalt or concrete ground surfaces, as well as very hard-packed soils. An acoustically “soft” or absorptive site is characteristic of unpaved loose soil or vegetated ground.

With respect to examples of this distance-attenuation relationship for exterior noise, a 60 dBA noise level measured at 50 feet from a transformer within a paved substation site would diminish to 54 dBA at 100 feet from the source, and to 48 dBA at 200 feet from the source. This scenario is addressed by the point source attenuation for a hard site (6 dBA with each doubling of the distance). For the scenario where soft side conditions exist between the point source and receptor, represented by a corridor of vegetation or open ground along the substation perimeter, an attenuation rate of

7.5 dBA per doubling of distance would apply; the transformer noise measured as a 60 dBA noise level at 50 feet would diminish to 52.5 dBA at 100 feet from the source and to 45 dBA at 200 feet from the source, where soft ground with or without vegetation exists between the sound source and the receptor location.

Structural Noise Attenuation

Sound levels can also be attenuated by man-made or natural barriers. Solid walls, berms, or elevation differences typically reduce noise levels in the range of approximately 5 to 15 dBA (Caltrans 1998). Structures can also provide noise reduction by insulating interior spaces from outdoor noise. The outside-to-inside noise attenuation provided by typical structures in California ranges between 17 to 30 dBA with open and closed windows, respectively, as shown in **Table 3.12-2.**

TABLE 3.12-2
OUTSIDE-TO-INSIDE NOISE ATTENUATION (DBA)

Building Type	Open Windows	Closed Windows[1]
Residences	17	25
Schools	17	25
Churches	20	30
Hospitals/Offices/Hotels	17	25
Theaters	17	25

[1] As shown, structures with closed windows can attenuate exterior noise by a minimum of 25 to 30 dBA.
SOURCE: Transportation Research Board, National Research Council, 2000; Noise Assessment Technical Report for the Gen-Tie Routes for Edwards Air Force Base (AFB) Solar Enhanced Use Lease (EUL) Project, prepared by Dudek, dated October 2017.

Fundamentals of Vibration

Vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. The response of humans to vibration is very complex. However, it is generally accepted that human response is best approximated by the vibration velocity level associated with the vibration occurrence.

Heavy equipment operation, including stationary equipment that produces substantial oscillation or construction equipment that causes percussive action against the ground surface, may be perceived by building occupants as perceptible vibration. It is also common for groundborne vibration to cause windows, pictures on walls, or items on shelves to rattle. Although the perceived vibration from such equipment operation can be intrusive to building occupants, the vibration is seldom of sufficient magnitude to cause even minor cosmetic damage to buildings.

When evaluating human response, groundborne vibration is usually expressed in terms of root mean square (RMS) vibration velocity. RMS is defined as the average of the squared amplitude of the vibration signal. As for sound, it is common to express vibration amplitudes in terms of decibels defined as: $Lv = 20 \log (Vrms/Vref)$, where Vrms is the RMS vibration velocity amplitude in inches/second and Vref is the decibel reference of $1x10^{-6}$ inches/second.

To avoid confusion with sound decibels, the abbreviation VdB is used for vibration decibels. The vibration threshold of perception for most people is around 65 VdB. Vibration levels in the 70 to 75 VdB range are often noticeable but generally deemed acceptable, and levels in excess of 80 VdB are often considered unacceptable (FTA 2006).

When evaluating the response of buildings, groundborne vibration is typically expressed as peak particle velocity (PPV). This value represents the greatest instantaneous particle velocity during a given time interval, and applies to earth materials in contact with the structure of concern. The California Department of Transportation (Caltrans) (2004) uses a damage threshold of 0.2 inches/second PPV for conventional buildings.

As described in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment* (FTA, 2006), groundborne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operation of heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. Peak particle velocity is typically a factor of 1.7 to 6 times greater than RMS vibration velocity (FTA, 2006). The decibel notation acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration sensitive equipment.

The effects of groundborne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration levels exceed the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV (FTA, 2006).

In residential areas, the background vibration velocity level is usually around 50 VdB (approximately 0.0013 in/sec PPV). This level is well below the vibration velocity level threshold

of perception for humans, which is approximately 65 VdB. A vibration velocity level of 75 VdB is considered to be the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA, 2006).

Health Effects of Noise

Noise is known to have a number of different adverse effects on humans. Based upon these recognized adverse effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on effects of noise on people such as hearing loss (not generally associated with community noise), communication interference, sleep interference, physiological responses, and annoyance.

3.12.1.3 Sensitive Receptors

Sensitive receptors are land uses that may be subject to stress and/or interference from excessive noise. The Noise Element of the Kern County General Plan identifies residences, schools, hospitals, parks, churches, and other similar land uses to be sensitive receptors. Industrial and commercial land uses are generally not considered sensitive to noise, with the exception of commercial lodging facilities. Land uses especially sensitive to vibration include concert halls, hospitals, libraries, vibration sensitive research operations, residential areas, schools, and offices.

3.12.1.4 Regulatory Framework

Federal

The Noise Control Act of 1972 establishes a national policy to promote an environment for all Americans to be free from noise that jeopardizes their health and welfare.

Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety, commonly referenced as the "Levels Document," establishes an Ldn of 55 dBA ("A-weighted decibel") as the requisite level, with an adequate margin of safety, for areas of outdoor uses, including residences and recreation areas (EPA, 1974). This document identifies safe levels of environmental noise exposure without consideration of costs for achieving these levels or other potentially relevant considerations.

The Federal Energy Regulatory Commission Guidelines on Noise Emissions from Compressor Stations, Substations, and Transmission Lines, require that

> *"the noise attributable to any new compressor stations, compression added to an existing station, or any modification, upgrade, or update of an existing station must not exceed a Ldn of 55 dBA ("A-weighted decibel") at any preexisting noise-sensitive area (such as schools, hospitals, or residences)."*

This policy was adopted based on the USEPA-identified level of significance of 55 Ldn dBA.

Federal Highway Administration

The purpose of the Federal Highway Administration (FHWA) Noise Abatement Procedure is to provide procedures for noise studies and noise abatement measures to help protect the public health and welfare, supply noise abatement criteria, and establish requirements for information to be given

to local officials for use in the planning and design of highways. It establishes five categories of noise-sensitive receptors and prescribes the use of the hourly Leq as the criterion metric for evaluating traffic noise impacts.

Department of Housing and Urban Development (HUD)

The Department of Housing and Urban Development regulations set forth the following exterior noise standards for new home construction assisted or supported by the department:

- 65 Ldn or less – Acceptable
- 65 Ldn and < 75 Ldn – Normally unacceptable, appropriate sound attenuation measures must be provided
- 75 Ldn – Unacceptable

HUD's regulations do not contain standards for interior noise levels. Rather a goal of 45 dBA is set forth, and attenuation requirement are gears to achieve that goal.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) Occupation Noise Exposure Hearing Conservation Amendment (Federal Register 48 [46], 9738-9785, 1983) stipulate that protection against the effects of noise exposure shall be provided for employees when sound levels exceed 90 dBA over an 8 hour exposure period. Protection shall consist of feasible administrative or engineering controls. If such controls fail to reduce sound levels to within acceptable levels, personal protective equipment shall be provided and used to reduce exposure of the employee. Additionally, a Hearing Conservation Program must be instituted by the employers whenever employee noise exposure equals or exceeds the action level of an 8-hour time-weighted average sound level of 85 dBA. The Hearing Conservation Program requirements consist of periodic area and personal noise monitoring, performance and evaluation of audiograms, provision of hearing protection, annual employee training, and record keeping.

State

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, declares that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological psychological, and economic damage. It also identifies a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the state of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

California Environmental Quality Act (CEQA)

CEQA requires that all environmental effects of a project be analyzed, including environmental noise. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of standards established in the local general plan or noise ordinance.

Additionally, under CEQA, a project has a potentially significant impact if the project creates a substantial increase in the ambient noise levels in the project vicinity above levels existing without the project. If a project has a significant impact, mitigation measures must be prescribed.

Local

Kern County General Plan

The Noise Element of the General Plan is a mandatory element as required by California Government Code Section 65302 (f). The state requires that local jurisdictions prepare statements of policy indicating their intentions regarding noise and noise sources, establish desired maximum noise levels according to land use categories, set standards for noise emission from transportation and fixed-point sources, and prepare implementation measures to control noise. Noise elements are prepared in accordance with *Guidelines for the Preparation and Content of Noise Elements of the General Plan* published by the California Office of Noise Control in 1976.

The major purpose of the Noise Element of the Kern County General Plan is to establish reasonable standards for maximum desired noise levels in Kern County, and to develop an implementation program which could effectively mitigate potential noise problems. The implementation measures have been designed so that they will not subject residential or other noise-sensitive land uses to exterior noise levels in excess of 65 dBA Ldn, and interior noise levels in excess of 45 dBA Ldn. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the Proposed Action. These measures are not listed below, but, as stated in Chapter 1, *Introduction*, all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 3: Noise Element

<u>Goal</u>

Goal 1: Ensure that residents of Kern County are protected from excessive noise and that moderate levels of noise are maintained.

<u>Policies</u>

Policy 1: Review discretionary industrial, commercial, or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses.

Policy 2: Require noise level criteria applied to all categories of land uses to be consistent with the recommendations of the California Division of Occupational Safety and Health (DOSH).

Policy 3: Encourage vegetation and landscaping along roadways and adjacent to other noise sources in order to increase absorption of noise.

Policy 4: Utilize good land use planning principles to reduce conflicts related to noise emissions.

Policy 6: Ensure that new development in the vicinity of airports will be compatible with existing and projected airport noise levels as set forth in the Airport Land Use Compatibility Plan (ALUCP).

Policy 7: Employ the best available methods of noise control.

Implementation Measures

Measure A: Utilize zoning regulations to assist in achieving noise-compatible land use patterns.

Measure C: Review discretionary development plans, programs and proposals, including those initiated by both the public and private sectors, to ascertain and ensure their conformance to the policies outlined in this element.

Measure E: Review discretionary development plans to ensure compatibility with adopted Airport Land Use Compatibility Plans.

Measure F: Require proposed commercial and industrial uses or operations to be designed or arranged so that they will not subject residential or other noise sensitive land uses to exterior noise levels in excess of 65 dB Ldn and interior noise levels in excess of 45 dB Ldn.

Measure G: At the time of any discretionary approval, such as a request for a General Plan Amendment, zone change or subdivision, the developer may be required to submit an acoustical report indicating the means by which the developer proposes to comply with the noise standards. The acoustical report shall:

a) Be the responsibility of the applicant.

b) Be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics.

c) Be subject to the review and approval of the Kern County Planning and Natural Resources Department and the Environmental Health Services Department. All recommendations therein shall be complied with prior to final approval of the project.

Measure I: Noise analyses shall include recommended mitigation, if required, and shall:

a) Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.

b) Include estimated noise levels for existing and projected future (10 – 20 years hence) conditions, with a comparison made to the adopted policies of the Noise Element.

c) Include recommendations for appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.

d) Include estimates of noise exposure after the prescribed mitigation measures have been implemented. If compliance with the adopted standards and policies of the Noise Element will not be achieved, a rationale for acceptance of the project must be provided.

Measure J: Develop implementation procedures to ensure that requirements imposed pursuant to the findings of an acoustical analysis are conducted as part of the project permitting process.

The Kern County General Plan Energy Element requires an acoustical analysis for energy project proposals that might impact sensitive and highly-sensitive uses in accordance with the Noise Element of the General Plan.

Kern County General Plan Chapter 5. Energy Element

Policy

Policy 10: The County should require acoustical analysis for energy project proposals that might impact sensitive and highly-sensitive uses in accordance with the Noise Element of the General Plan.

The Kern County Noise Ordinance establishes acceptable hours of construction and limitations on construction-related noise impacts on adjacent sensitive receptors. Noise-producing construction activities that are audible to a person with average hearing ability at a distance of 150 feet from the construction site, or if the construction site is within 1,000 feet of an occupied residential dwelling are prohibited between the hours of 9:00 p.m. and 6:00 a.m. on weekdays, and between 9:00 p.m. and 8:00 a.m. on weekends.

1. The Development Services Agency Director and his/her designated representative may for good cause exempt some construction work for a limited time.
2. Emergency work is exempt from this section.

The Kern County Airport Land Use Compatibility Plan includes an Air Installation Compatible Use Zones (AICUZ) study that establishes standards and guidelines that protect community safety and health, promote appropriate development in the vicinity of military airfields, and protect taxpayer's investment in national defense. Presently, base personnel are updating the present AICUZ study to reflect the ongoing changes at the installation. The AICUZ indicates the location of safety zones and noise impacts associated with the flying mission.

The Mojave Specific Plan guides development within and surrounding the Mojave community and works in tandem with the Kern County General Plan and Zoning Ordinance. The Mojave Specific Plan establishes policies to protect residents in the planning area from the harmful effects of excessive exposure to noise. The objectives and policies focus on minimizing the effects of transportation-related noise. For transportation noise sources (e.g., roadways, rail lines), the Mojave Specific Plan Noise Element establishes land use compatibility criteria of 65 dBA Ldn for exterior noise levels and 45 dBA Ldn for interior noise levels within "sensitive" land uses, which include residential areas.

The West Edwards Road Settlement Specific Plan states any land division map or other legal instrument of land division filed and recorded shall contain an information statement that the property is within the area of Edwards Flight Test Center Operations and may be subject to noise related to aircraft flight testing activities.

There are no goals, policies, or implementation measures within the South of Mojave -Elephant Butte Specific Plan that apply to Noise.

The Actis Interim Rural Community Plan Map area could potentially be affected by the project.

The Willow Springs Specific Plan (WSSP) defines the planning requirements of roughly 50,560 acres within the County in order to ensure orderly development of the area. The WSSP includes goals, policies, and implementation measures that minimize disruption of the quality of life

resulting from excessive noise, including controlling noise emissions from new development to the standards of the Kern County General Plan Noise Element. The gen-tie alignments are located within the area covered by the WSSP. The WSSP establishes noise generation limits of 55 dBA Leq during the daytime, 45 dBA Leq during the daytime for residential areas, and a maximum transportation noise exposure level of 65 dBA CNEL.

3.12.1.5 Environmental Setting

This section describes the existing physical environmental conditions in the vicinity of the proposed solar facility site and the proposed gen-tie route options as they relate to the potential noise impacts of the proposed project.

Sensitive Receptors

The distance to sensitive receptors from the proposed project is measured from the exterior project boundary of the proposed solar facility site or from the proposed gen-tie line corridor only and not from individual construction areas within the interior of the solar facility site. There are no existing structures located on areas of the project site where development is proposed. Noise-sensitive land uses located in the vicinity of the proposed solar facility site are primarily rural residences located immediately north of the project site along East Trotter Avenue (approximately 100 feet to the north) and west of the site along Lone Butte Road (approximately 2,800 feet to the west). As discussed above, there are three options for the east-west gen-tie routes (Options A, B, and C) and two options for the north-south gen-tie routes (Options 1 and 2); therefore, the distance to sensitive receptors varies. As illustrated in **Table 3.12-3** and **Table 3.12-4**, the nearest residences to the alignments are from approximately 50 feet away, and these occur along North-South Gen-Tie Route Option 2. The nearest residence to North-South Gen-Tie Route Option 1 is at a distance of 185 feet. The nearest residence to the East-West Gen-Tie Route is 1,195 feet away.

TABLE 3.12-3
EAST-WEST GEN-TIE ROUTE OPTIONS SENSITIVE RECEPTORS

Arizona Avenue	14 residences 1,440 to 2,600 feet north of alignment
Winchester Road	Approximately 100 residences 1,195 feet north of alignment

SOURCE: Dudek, 2017.

TABLE 3.12-4
NORTH-SOUTH GEN-TIE ROUTE OPTIONS SENSITIVE RECEPTORS

North-South Gen-Tie Route Option 1 Sensitive Receptors	
20th Street	3 residences 925, 950, 1,725 feet west of alignment
15th Street	11 residences 2,100 to 2,425 feet west of alignment
East Trotter Avenue	2 residences 185 and 525 feet west of alignment
North-South Gen-Tie Route Option 2 Sensitive Receptors	
Reed Avenue	4 residences 50 to 510 feet east of alignment
La Cita	1 residences 1,325 feet east of alignment
Lone Butte	2 residences – 175 and 225 feet east of alignment 2 residences – 850 feet east of alignment 3 residences – 50, 175, 200 feet east of alignment 3 residences – 80, 90, 200 feet east of alignment 1 residence – 140 feet southwest of alignment

SOURCE: Dudek, 2017.

Vibration-Sensitive Land Uses

Land uses at which groundborne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations (FTA 2006) are considered "vibration-sensitive." The degree of sensitivity depends on the specific equipment that would be affected by the groundborne vibration. Excessive levels of groundborne vibration of either a regular or an intermittent nature can result in annoyance to residential uses. There are no known vibration-sensitive land uses within 10 miles of the project area.

Existing Noise Levels

To quantify existing ambient noise levels in the area of the proposed solar facility site, Dudek conducted noise measurements on February 13, 2018. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the proposed solar facility site. Each measurement was conducted for a duration of 15 minutes. This duration was deemed appropriate given the rural setting of the project area and the fact that noise generating construction activities would be occurring during daytime hours. The sound monitoring location, times of the measurement, and existing ambient Leq, Lmin, and Lmax sound levels recorded for each monitoring location are provided in **Table 3.12-5**. The short-term monitoring locations (denoted as NM-#) are illustrated on **Figure 3.12-1**.

TABLE 3.12-5
NOISE MEASUREMENTS (PROPOSED SOLAR FACILITY AREA)

Site	Location	Leq (dBA)	Lmin (dBA)	Lmax (dBA)	Date	Time
1	Near a single family home on the northeastern corner of the Fetters Street/Trotter Avenue intersection (near the northwestern boundary of the proposed solar facility site).	58.9	43.1	75.6	2/13/18	12:34 pm
2	Near a single-family home located along Lone Butte Road, west of the proposed solar facility site.	62.3	40.3	84.7	2/13/18	12:10 pm

dBA=A-weighted decibel; Leq=equivalent sound level; Lmax =maximum sound level; Lmin =minimum sound level.
Peak (dB) reflects peak operating conditions and addresses the annoying aspects of intermittent noise.
SOURCE: Dudek, 2018.

To quantify existing ambient noise levels in the area of the gen-tie line corridor, Dudek conducted noise measurements on June 14, 2017 and June 15, 2017. Two types of sound-level measurements were taken: two long-term measurements (24-hour duration) were performed in the general vicinity of North-South Gen-Tie Route Options 1 and 2, at locations removed from existing roadways; and three short-term (varying from 6 to 15 minutes) measurements were performed along the east-west gen-tie route, including one measurement adjacent to SR 14 which included manual traffic counts. Table 3.12-6 summarizes the existing ambient Lmin and Lmax sound levels recorded for each monitor location during the 24-hour measurement, as well as the calculated 24-hour weighted average noise level (Ldn).

The sound monitoring location, dates of the measurement, and sound sources affecting the monitoring location are also provided in **Table 3.12-6** for each monitor location. The long-term monitoring locations (denoted as LT#) are illustrated on **Figure 3.12-2.**

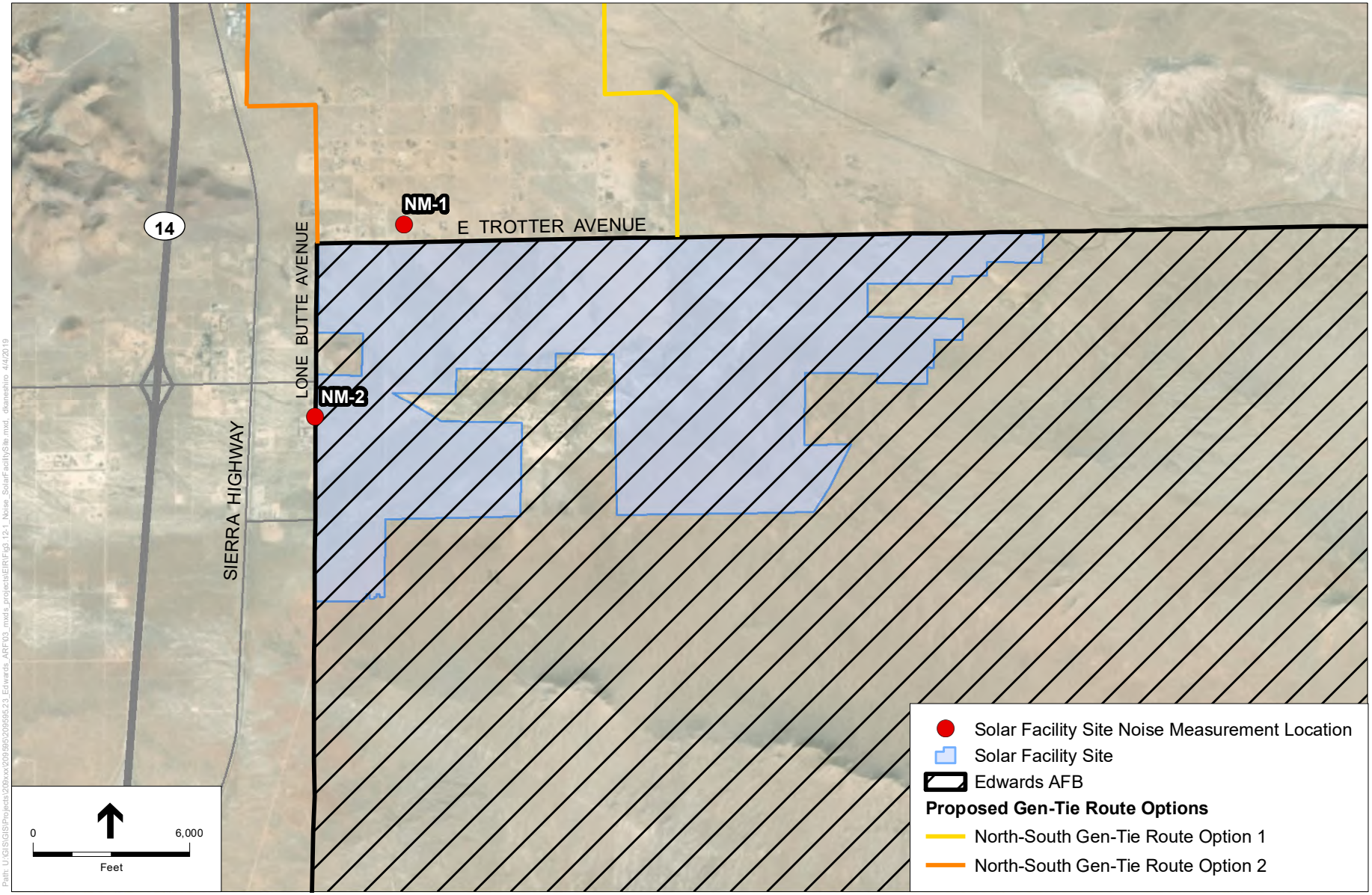


FIGURE 3.12-1: SOLAR FACILITY SITE NOISE MEASUREMENT LOCATIONS

TABLE 3.12-6
LONG-TERM NOISE MEASUREMENTS (PROPOSED GEN-TIE LINE CORRIDOR)

Site	Location	Noise Sources	Dates	Ldn (dBA)	Lmax (dBA)	Lmin (dBA)
LT1	West of North-South Gen-Tie Option 1	Distant vehicular traffic on SR-58	6/14/17 6/15/17	64	64	38
LT1	West of North-South Gen-Tie Option 2	Distant vehicular traffic on SR-14	6/14/17 6/15/17	63	61	38

SOURCE: Dudek,2017.

The results of the ambient noise survey from long-term measurements reflect noise levels that range between 63 and 64 dBA Ldn (or CNEL) in the general vicinity of North-South Gen-Tie Route Options 1 and 2. The primary noise source contributing to the ambient noise environment was traffic, despite the selection of noise monitor locations distant from principal roadways. SR-14 and SR-58 are major roadways and contributors to the ambient noise environment in the vicinity of the proposed gen-tie line corridor. As described previously, according to the Kern County General Plan Noise Element, a sensitive receptor should not be exposed to noise levels exceeding 65 dBA Ldn (or CNEL); since the gen-tie routes are located on land within the jurisdiction of the County, the ambient noise levels recorded at each of the long-term monitor locations evidence existing noise conditions that would be within acceptable levels for noise-sensitive receptors.

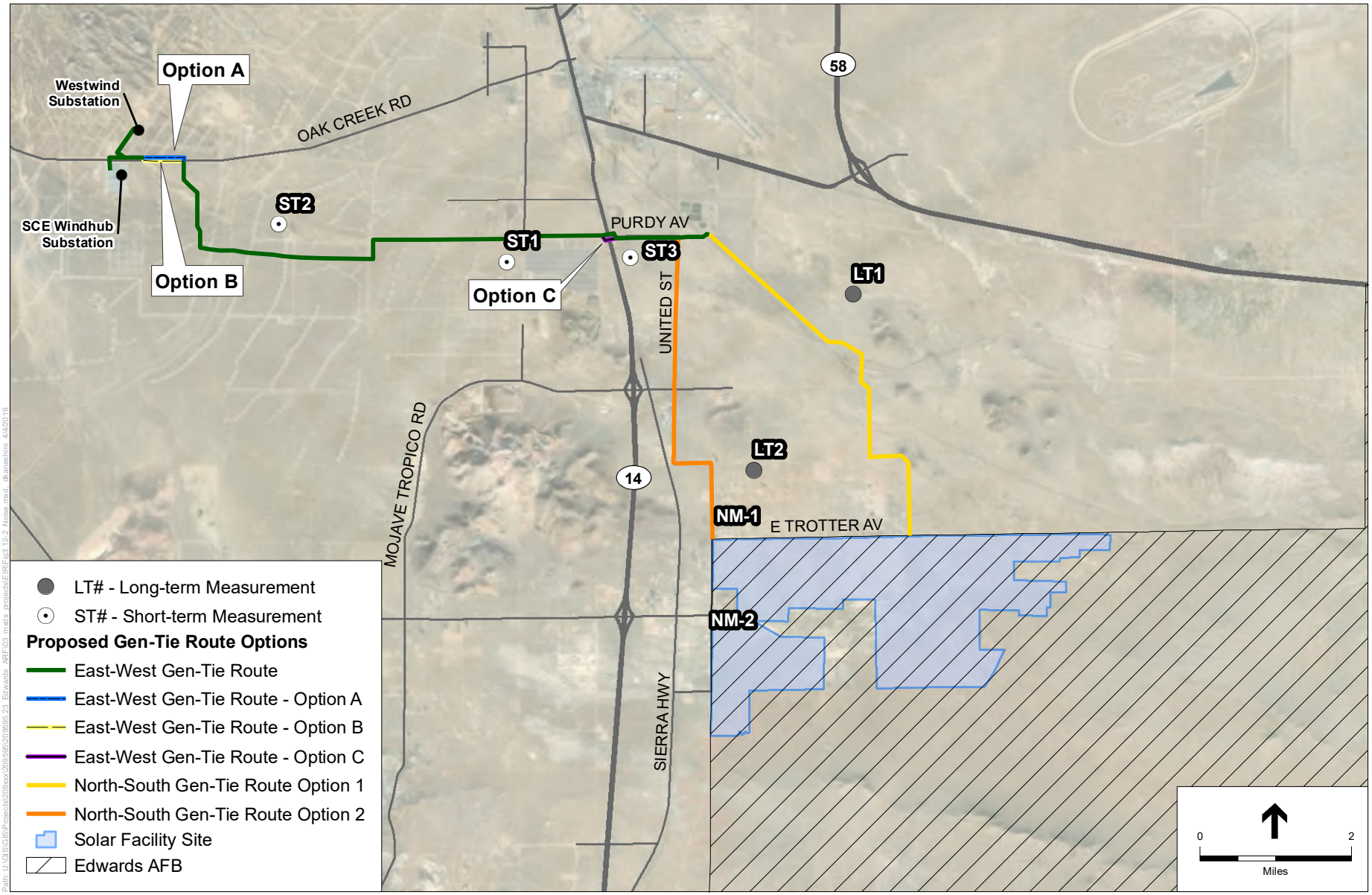


FIGURE 3.12-2: GEN-TIE LINE CORRIDOR NOISE MEASUREMENT LOCATIONS

One important source of noise generation in the area of the proposed gen-tie line corridor are wind turbines. The east-west gen-tie route passes through a sizable wind-energy generation facility and would also cross SR-14. Further, the southern portion of North-South Gen-Tie Route Option 2 is located proximate to SR-14. Short-term noise measurements were conducted within the wind-energy generation facility along the east-west gen-tie route. A short-term noise measurement with manual traffic counts was completed adjacent to SR-14 along the east-west gen-tie route. These measurements are useful in characterizing ambient noise levels associated with the wind turbines and along the major roadway within the proposed gen-tie line corridor. The results of these short-term noise measurements are presented in **Table 3.12-7**. The short-term roadway noise measurement locations (denoted as ST#) are illustrated on Figure 3-12-2.

TABLE 3.12-7
SHORT-TERM NOISE MEASUREMENTS (PROPOSED GEN-TIE LINE CORRIDOR)

ST#	Measurement Date	Measurement Time Period	Leq (dBA)	Lmax (dBA)	Lmin (dBA)	Remarks
1	6/14/2017	3:25-3:35	34	51	31	Purdy Road @ Holt Street, several turbines
2	6/14/2017	3:45-4:00	52	58	51	Purdy Road @ 54th Street, many turbines
3	6/14/2017	4:30-4:36	75	82	59	SR-14 @ 50 feet from edge of pavement, 202 cars, 18 heavy trucks, 7 medium trucks

SOURCE: Dudek, 2017.

The highest recorded average noise level (75 dBA Leq) was associated with traffic on SR-14 at a distance of approximately 50 feet from the edge of pavement. Based on an outdoor attenuation rate of 4.5 dBA with a doubling of distance from a roadway soft site conditions), noise levels would diminish to 65 dBA Leq at approximately 230 feet from the edge of pavement. The measurements conducted within various areas of the existing wind-energy generation facility had average noise levels ranging from 34 to 52 dBA Leq. With the exception of areas within 230 feet of SR-14, current average noise levels in the proposed gen-tie line corridor would generally not exceed acceptable levels for a sensitive receptor.

3.12.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences related to noise for the proposed project. It describes the methods used to analyze the effects of the proposed project and lists the thresholds used to assess whether an effect would be significant.

3.12.2.1 Assessment Methods/Methodology

Noise impacts associated with the proposed project were assessed in this section based primarily on the Acoustical Assessment for the Oro Verde Solar Project ("RBF 2013"), the Noise Assessment Technical Report for the Gen-Tie Routes for Edwards Air Force Base (AFB) Solar Enhanced Use Lease (EUL) Project ("noise assessment" or "Dudek, 2017") and the Edwards Air Force Base Solar Project Update to Ambient Noise Measurements Memorandum ("Dudek, 2018"). The complete reports are included in Appendix J of this EIS/EIR. The noise analysis for the Proposed Action

includes potential noise and groundborne vibration impacts that may occur during construction, operation and maintenance, and decommissioning.

3.12.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was determined to be significant if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice. A project would have a significant impact related to noise if it would::

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Expose persons to or generate excessive ground borne vibration or groundborne noise levels
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- For a project located within the Kern County Airport Land Use Compatibility Plan, expose people residing or working in the project area to excessive noise levels
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels

The County determined in the NOP (see Appendix A) that the following environmental issue areas would result in no impacts or less-than-significant impacts and therefore eliminated these issue areas from further review in this EIS/EIR:

- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels

3.12.3 Analysis of Environmental Effects

3.12.3.1 Alternative A: 4,000-Acres EUL (Preferred Alternative)

NEPA: Environmental Impacts

Construction

Transportation of construction workers and construction equipment and materials would increase noise levels on surrounding roads. Construction worker commutes and the transport of construction equipment and materials to the proposed solar facility site would incrementally increase noise levels on access roads around the project site. It is anticipated that construction truck traffic would access the project site via Sierra Highway, Division Street, and Trotter Avenue.

Project-related construction vehicle noise levels were estimated by the developer of the previously proposed project at this site using the FHWA's Noise Prediction Model algorithms (Appendix B13) to characterize construction traffic noise conditions at the residences adjacent to East Trotter Avenue.

The model uses Calveno[1] reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle trip volume, speed, distance to the receiver, and the acoustical characteristics of the site. The traffic noise was modeled assuming the average traffic speed along East Trotter Avenue would be approximately 25 miles per hour. The modeled traffic noise levels in terms of the hourly Leq at the nearest residences, which are located approximately 100 feet from the centerline of East Trotter Avenue, are 60 dBA associated with workers commuting to the project site during the peak hour, and 64 dBA associated with delivery truck trips (Appendix 13).

However, once the solar facility site is reached, the trucks would use internal roadways that would be further away from the existing receptors. Haul truck volumes associated with the proposed project would vary from day to day, with the highest volumes generally occurring during the earthwork and equipment delivery stages. Haul trucks associated with construction would occur within the allowable hours for construction specified in the Kern County Noise Ordinance (6:00 a.m. to 9:00 p.m. on weekdays and 8:00 a.m. to 9:00 p.m. on weekends), since haul routes are located within County jurisdiction. Therefore, the Proposed Action would not result in adverse effects related to short-term noise increases associated with truck traffic increases on truck routes.

Construction of the proposed solar facility and gen-tie line corridor would generate noise that could expose nearby receptors to elevated noise levels that may disrupt communication and routine activities. The magnitude of the impact would depend on the type of construction activity, equipment, duration of the construction phase, distance between the noise source and receiver, and intervening structures.

It is anticipated that construction of the Proposed Action would take approximately two years. Construction of the proposed solar facility would include site preparation, PV system grading and installation, testing, and site cleanup work. Construction of the proposed gen-tie line corridor would involve clearing and grubbing of the existing vegetation at the pole locations; grading necessary for construction of dirt access roads, where necessary, and transmission pole foundations; and stringing of the transmission cable. Clearing of vegetation at a proposed pole location, and the construction of a foundation for the pole, would require approximately 2-3 construction days, with the erection of the pole requiring approximately one day. Access road construction to selected pole locations would require 1-2 days, as distance from existing roads would be very limited. Finally, stringing of the transmission line for any given gen-tie segment would likely occur in a single day. Compiled together, the construction activity for the gen-tie development would account for between approximately 4-6 days at any given pole location. Depending upon the average pole separation distance, any given residence might fall within 1,000 feet of active construction for up to 4-6 days out of the total gen-tie construction period.

Construction equipment for the solar facility would likely include graders, scrapers, backhoes, loaders, cranes, dozers, water trucks, portable generators and air-compressors, and miscellaneous trucks. Gen-tie construction would primarily involve backhoes, trucks, and light cranes. Noise from construction equipment generally exhibits point source acoustical characteristics. A point source sound is attenuated (i.e., is reduced) at a rate of 6 decibels per doubling of distance from the source for “hard site” conditions and at 7.5 decibels per doubling of distance for “soft site” conditions.

[1] California Vehicle Noise Reference Energy Mean Emission Levels.

The proposed solar facility and gen-tie line corridor are located in areas typically exhibiting soft site conditions, including dirt roads and open areas with native vegetation. These rules apply to the propagation of sound waves with no obstacles between source and receivers, such as topography (i.e., ridges or berms) or structures. The range of maximum noise levels for various types of construction equipment at a distance of 50 feet from a noise receptor is depicted in **Table 3.12-8**. A reasonable worst case assumption is that three pieces of equipment would operate simultaneously and continuously within a focused area. This worst case scenario resulting from composite construction noise is derived by adding the individual equipment noise levels logarithmically, which would result in a maximum level of 93 dBA at 50 feet from the source or 87 dBA (as estimated using equation N-2141.2 provided in the October 1998 Technical Noise Supplement prepared by Caltrans) at the location of the nearest sensitive receptor to the proposed solar facility site (100 feet from the project boundary). However, over the anticipated two-year construction period, the construction work would occur across the 4,000 acres of the project site and not continually at the project boundary nearest to the sensitive receptors.

TABLE 3.12-8
CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS

Equipment	Typical Sound Level (dB) – 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Roller	74
Saw	76
Scraper	89
Truck	88

SOURCE: FTA 2006; Dudek, 2017.

With respect to gen-tie construction noise, as illustrated in Table 3.12-3 and Table 3.12-4, there are several residences located at 50 feet from segments of the alignment of the proposed gen-tie line options. However, there are no residences closer than 50 feet and many of the existing residences are at much greater distances from the potential gen-tie alignments. As shown in Table 3.12-8**,** the average noise levels at 50 feet for typical equipment would range up to 89 dB for the type of equipment normally used for this type of project. The hourly average noise levels would vary, but construction noise levels of up to approximately 75–80 dB at 50 feet are typical for the anticipated construction of the gen-tie line corridor. Typical operating cycles may involve two minutes of full power, followed by three or four minutes at lower levels. With average construction noise levels during grading and other typical construction activities in the range of 75-80 dBA Leq (hourly) at 50 feet from the construction activity, even the nearest residences would not be exposed to extreme construction noise during gen-tie construction.

Although the adjacent residences could be exposed to high construction noise levels which could result in annoyance, the exposure would be short-term, would occur during the less sensitive daytime period, and would cease upon completion of project construction. For the gen-tie, which is located within County jurisdiction, it is anticipated that construction activities associated with the proposed project would take place between 6 a.m. and 9 p.m. weekdays and between 8 a.m. and 9 p.m. on weekends, which is the limit specified in the Kern County noise ordinance. However, construction activities could take place outside these time periods for portions of the proposed project where technical requirements dictate, such as completion of transmission line stringing. As a result, a significant construction noise impact could potentially occur. Mitigation Measures MM 3.12-1b and MM 3.12-2b would be implemented to reduce temporary construction related noise impacts from gen-tie construction for sensitive receptors within 1,000 feet of a construction area.

It should be noted that the other specific plan areas through which the project and gen-tie line corridor would traverse (i.e., the Mojave Specific Plan, the West Edwards Road Settlement Specific Plan, the South of Mojave-Elephant Butte Specific Plan, and the WSSP) defer to the Kern County noise standards and do not have separate noise requirements. Adherence to the Kern County General Plan goals and policies, as well as the Kern County Municipal Code, would minimize any potential adverse impacts from construction noise.

Construction Vibration

The heavier pieces of construction equipment used on the solar facility site would include dozers, graders, and pavers. Based on published vibration data, the anticipated construction equipment would generate a PPV of approximately 0.09 inches/second or less at a distance of 25 feet (FTA, 2006). Groundborne vibration is typically attenuated over short distances. The nearest existing residences to the solar facility construction boundary would be approximately 100 feet or more. At 100 feet from the source of activity, vibration velocities would range from 0.0004 to 0.081 inches/second PPV. Therefore, as each of these vibration values would fall well below the 0.1 inches/second PPV “perception” range and the 0.2 inches/second PPV “building damage” significance threshold, no sources of solar facility construction-related groundborne vibration would be expected to affect receptors or structures outside of the work areas.

Construction of the proposed gen-tie line corridor would have the potential to expose existing residences to groundborne vibration as construction activities would take place less than 100 feet from some residences. At 50 feet from the source of activity (the nearest residence to the gen-tie routes), vibration velocities could range up to 0.16 inches/second PPV. Therefore, while the vibration would be perceptible to some residents for a short time while construction is nearby, it would fall below the 0.2 inches/second PPV significance threshold, and gen-tie construction would not be anticipated to result in physical damage to existing residential structures. Therefore, impacts related to vibration from construction activities would be less than significant.

Operation and Maintenance

Project operations and maintenance would generally involve management of lighting, noise, materials storage and cleanup, safety, and equipment repair. Typically, the project is expected to be staffed by up to 10 full-time personnel for operation, maintenance, and security of the solar facility. Additional maintenance and security personnel would be dispatched to the solar facility, as needed. Operational noise levels that would be generated by the Proposed Action would include operation of onsite electrical equipment and worker trips to and from the site for inspection and maintenance purposes. Noise from electrical equipment, such as transformers, is characterized as a discrete low-frequency hum. Among this type of equipment, transformers would be expected to contribute the most to the composite noise at the site. The noise from transformers is produced by alternating current flux in the core that causes it to vibrate (an effect also known as magnetostriction).

The National Electrical Manufacturers Association standard sound levels for 1,000- to 1,500- kVA commercial transformers (e.g., liquid-filled transformers) at a distance of one foot from the source ranges between 58 to 60 dBA. However, because the proposed solar facility would only operate during daylight, noise levels associated with operation of transformers and other electrical equipment would only occur during daytime hours. Specific transformer locations within the solar facility have not been identified, but the nearest residential receptors adjacent to the site are at least 100 feet from the project site boundary. The noise level of transformers at the nearest sensitive receptor to the site boundary would be approximately 20 dBA or less, which is below the ambient noise level and below the County's maximum exterior noise level for noise-sensitive uses. Because the residences are located off base in land under County jurisdiction, an exterior noise exposure level of 65 dBA maximum is applicable to these residences.

The Proposed Action would employ passive solar power generation through the use of fix-mounted PV solar modules or single-axis trackers. Fixed mounted PV modules do not require heat transfer fluids or mechanical equipment, and do not generate noise. All electrical equipment within the solar array field would be either outdoor rated or mounted within electrical enclosures designed specifically for outdoor installation such that the noise from these units would not be perceptible to the nearest sensitive use.

The proposed solar facility would also include up to three on-base substations. Each substation would increase the generation voltage from 34.5 kV to 230 kV for off-base transmission to SCE's Windhub Substation and/or Westwind Substation. The National Electrical Manufacturers Association standard sound level for a step-up transformer of this capacity at a distance of 5 feet

from the source is 60 dBA. Because the proposed solar facility would only operate during daylight, noise levels associated with operation of the step-up transformers would only occur during daytime hours. Specific step-up transformer locations within the solar facility have not been identified, but the nearest residential receptors adjacent to the site are at least 100 feet from the project site boundary. The noise level of a step-up transformer at the nearest sensitive receptor to the site boundary would be approximately 28 dBA or less, which is below the ambient noise level and below the County's maximum exterior noise level for noise-sensitive uses. As with the other electrical equipment, the substations would not produce perceptible noise increases at the nearest sensitive receptors.

Operation of the proposed gen-tie transmission lines would have little potential to generate substantial levels of noise. However, transmission lines are subject to a phenomenon called "Corona discharge noise". Corona discharge results from the partial breakdown of the electrical insulating properties of the air surrounding electricity conductors. When the intensity of the electric field at the surface of the conductor exceeds the insulating strength of the surrounding air, a corona discharge occurs at the conductor surface, representing a small dissipation of heat and energy. Some of the energy may dissipate in the form of small local pressure changes that result in audible noise, or in radio or television interference. Audible noise generated by corona discharge is characterized as a hissing or crackling sound that may be accompanied by a hum.

Slight irregularities or water droplets on the conductor and/or insulator surface accentuate the electric field strength near the conductor surface, making corona discharge and the associated audible noise more likely. Therefore, audible noise from transmission lines is generally a foul weather (wet conductor) phenomenon. Based on precipitation data from the Western Regional Climate Center, the Mojave region receives approximately 6.7 inches of precipitation a year, with daily highs of less than 0.10 inch per day (WRCC 2017). Because the number of days and amount of precipitation per year would be minimal, corona events would be rare and intermittent.

Nonetheless, to evaluate the potential significance of corona noise, research was conducted to determine the sound level associated with this phenomenon. Veneklasen Associates conducted noise measurements of a 500 kV double-circuit transmission line. Since corona noise is relative to the capacity of the transmission line, the noise levels from a 500 kV line would be greater than for the project's 230 kV transmission line. Veneklasen conducted noise measurements on a 15-minute average for a 500 kV double-circuit transmission line near Serrano Substation in Anaheim Hills, when humidity was greater than 80 percent and temperatures were in the range of 60 degrees F (conditions contributing to high corona noise). Directly under the transmission line tower, the measured level of corona noise, when ideal conditions existed for this phenomenon to occur, were 46 dBA (Veneklasen Associates, Inc. 2004). Beyond 100 feet of the T/L, the corona noise level drops at a rate of approximately 4 dB for each doubling of the distance. At a distance of 50 feet from the transmission line (the nearest residence) the corona discharge noise level would be approximately 44 dBA roughly equivalent to the existing ambient noise levels in the project area. Consequently, corona noise would not have the potential to create an operational noise level of 65 dBA CNEL, or to increase ambient noise levels greater than 5 dBA above ambient. Since gen-tie routes are located on land under the jurisdiction of the County, the exterior exposure limit of 65 dBA CNEL for residences is applicable to long-term operational noise from the gen-tie.

The project would install polymer (silicon rubber) insulators on any new gen-tie transmission line connections. This material is hydrophobic (repels water) and minimizes the accumulation of surface contaminants such as soot and dirt, which in turn reduces the potential for corona noise to be generated at the insulators. With consideration of these standard practices, noise from coronal discharge would not represent a substantial increase in noise levels in the project vicinity.

Other maintenance activities, such as visual inspections, vegetation mowing, and parts replacement, would be expected to be long-term over the life of the Proposed Action. Potential effects from these activities on the existing ambient noise levels may be detectable for a short duration at the site and on local roads (minor increase in traffic), but given the relative location of the site with respect to sensitive receptors, any potential increases in the noise levels onsite are unlikely to be detectable or of concern to nearby receptors. Due in part to the relatively low number or employees needed to operate and maintain the project, project operation would not interfere with traffic flow function, increase traffic volumes, or result in roadway modifications. Furthermore, since the project would comply with Kern County Municipal Code's (Chapter 8.36, Noise Control) 65 dBA Ldn for outdoor activity areas for neighboring residential properties, there would be no long-term effects on existing ambient noise and vibration levels from operations and maintenance of the Proposed Action.

Decommissioning

During the decommissioning phase, solar panels would be dismantled and removed from the site by truck and footings would be removed to a depth of three feet. The types of equipment used and activities performed during decommissioning would be similar to the construction phase of the project. Thus, decommissioning activities could generate temporary noise levels and effects similar to those that would occur during construction (as previously described).

CEQA: Impact Significance Determination

Impact 3.12-1: Exposure of persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies.

Construction, Operation and Maintenance, and Decommissioning

As described above in the NEPA analysis, during the construction and decommissioning phases, the maximum noise level generated at the solar facility site would be 93 dBA at 50 feet from the noise source or 87 dBA at the location of the nearest sensitive receptor (located at least 100 feet from construction activities). Along the proposed gen-tie line corridor, the maximum noise level is estimated to be 75-80 dBA at 50 feet, which is the distance from gen-tie construction to the nearest sensitive receptor. Temporary noise generated during construction and decommissioning is permitted in Kern County so long as noise is not generated within 1,000 feet of an occupied residential dwelling between the hours of 9:00 p.m. and 6:00 a.m. on weekdays, and between 9:00 p.m. and 8:00 a.m. on weekends pursuant to the Kern County Noise Ordinance (Chapter 8.36 of the Kern County Municipal Code). However, the project does not propose nighttime construction and would comply with all regulations within the Kern County Noise Ordinance. Thus, noise impacts associated with a potential violation of established noise standards in the County General Plan and Noise Ordinance during the construction and decommissioning phases would be less than

significant. However, Mitigation Measures MM 3.12-1a and MM 3.12-2a for the solar facility portion of the project site, as well as Mitigation Measures 3.12-1b and 3.12-2b for the gen-tie portion of the site, would be required when construction activities occur within 1,000 feet of an occupied residence in the County to avoid impacts from construction activities that may need to occur outside of allowable hours. Activities associated with operation and maintenance of the proposed solar facility and gen-tie line corridor would not be capable of producing noise levels in excess of Kern County standards (see Section 3.12.5). Impacts during operation and maintenance of the proposed solar facility and gen-tie line corridor would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.12-1a and MM 3.12-2a, as well as Mitigation Measures 3.12-1b and 3.12-2b (see Section 3.12.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.12-2: Exposure of persons to, or generate, excessive groundborne vibration or groundborne noise levels?

Construction, Operation and Maintenance, and Decommissioning

The nearest structures to the construction activity area of the proposed solar facility site are residences, which are approximately 100 feet from the project site. As described above in the NEPA analysis, at 100 feet from the source of activity, vibration velocities would range from 0.0004 to 0.081 inches/second PPV. Therefore, since vibration would fall below the 0.2 inches/second PPV significance threshold, solar facility construction-related groundborne vibration would not be expected to affect receptors outside of the work areas, and there would not be any potential for excessive exposure of persons to or generation of groundborne vibration levels.

Construction of the proposed gen-tie line corridor would have the potential to expose existing residences to groundborne vibration as construction activities would take place within 200 feet of some residences. With respect to any given existing residence in the area of the proposed gen-tie line corridor, construction activity close enough to cause any perceptible ground borne vibration would likely occur approximately 4–6 days, out of the total construction duration for the gen-tie alignment. At 50 feet from the source of activity (the nearest residence to the gen-tie routes), vibration velocities could range up to 0.16 inches/second PPV. Therefore, since vibration would fall below the 0.2 inches/second PPV significance threshold, gen-tie construction would not be anticipated to result in significant vibration impacts upon existing residences. Construction activities of the proposed gen-tie line corridor would not include blasting or pile driving. Further, there are no known vibration-sensitive land uses (i.e., research, manufacturing, or medical facilities using vibration-sensitive devices) within 10 miles of the proposed gen-tie line corridor area. However, implementation of mitigation measure MM 3.12-1b would further reduce any temporary gen-tie line construction-related noise impacts.

Activities associated with operation and maintenance of the proposed solar facility and gen-tie line corridor would not be capable of producing vibration levels in excess of Kern County standards

(see Section 3.12.1.5). Vibration-related impacts during operation and maintenance of the proposed solar facility and gen-tie line corridor would be less than significant.

Mitigation Measures

Implement Mitigation Measure MM 3.12-1b

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.12-3: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Construction, Operation and Maintenance, and Decommissioning

Operation and maintenance of the proposed project would not result in any activities that would generate substantial temporary or periodic increases in ambient noise levels. During project construction and decommissioning, temporary yet substantial sound levels would be generated at the proposed solar facility site and along the proposed gen-tie line corridor above levels existing without the project. The existing ambient noise levels in the proposed solar facility area ranges from 58.9 dBA Leq to 62.3 dBA Leq (see Table 3.12-5). The results of the existing ambient noise levels from long-term measurements reflect levels that range between 63 dBA Ldn and 64 dBA Ldn in the general vicinity of North-South Gen-Tie Route Options 1 and 2 (see Table 3.12-6). The results of the existing ambient noise levels from short-term measurements reflect levels that range between 34 dBA Leq and 75 dBA Leq in the general vicinity of the East-West Gen-Tie Route which passes through a wind-energy generation facility and would also cross SR-14 (see Table 3.12-7). The maximum sound level generated during construction of the proposed solar facility area would be 93 dBA Leq at 50 feet. The nearest sensitive receptors from the proposed solar facility site at 100 feet away from the roadway centerline would experience noise levels of approximately 87 dBA Leq, an increase of 32 dBA. Along the proposed gen-tie line corridor, the maximum noise level is estimated to be 75-80 dBA at 50 feet from the nearest sensitive receptor, an increase ranging from 0 dBA to 46 dBA. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of standards established in the local general plan or noise ordinance. The County of Kern has established a noise ordinance to regulate construction noise. Temporary noise generated during construction and decommissioning is permitted in Kern County so long as noise is not generated within 1,000 feet of an occupied residential dwelling between the hours of 9:00 p.m. and 6:00 a.m. on weekdays, and between 9:00 p.m. and 8:00 a.m. on weekends pursuant to the Kern County Noise Ordinance (Chapter 8.36 of the Kern County Municipal Code). Thus, compliance with the Kern County Noise Ordinance would ensure that temporary increases in ambient noise are less than significant. However, Mitigation Measures MM 3.12-1a and MM 3.12-2a for the solar facility portion of the project site, as well as Mitigation Measures 3.12-1b and 3.12-2b for the gen-tie portion of the site, would be required when construction activities occur within 1,000 feet of a sensitive receptor to further reduce impacts. This impact would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.12-1a and MM 3.12-2a, as well as Mitigation Measures MM 3.12-1b and MM 3.12-2b (see Section 3.12.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.12-4: For a project located within the Kern County Airport Land Use Compatibility Plan (ALUCP), would the project expose people residing or working in the project area to excessive noise levels.

As described in Section 3.4, *Airspace Management and Use*, the proposed solar facility site would be located on Edwards AFB, which is identified in the Kern County ALUCP. In addition, the solar facility site and portions of the gen-tie line corridor would be located 5 miles and 1.5 miles, respectively, from the Mojave Air and Space Port, which is also identified in the ALUCP.

The construction workforce may consist of 100 to 450 daily workers. Operational workforce is expected to consist of up to 10 full-time employees. The project site is also adjacent to sensitive residential uses. These existing sensitive receptors located within the proposed solar facility area already experience ambient noise levels ranging from 58.9 dBA Leq to 62.3 dBA Leq (see Table 3.12-5). The existing sensitive receptors located within the proposed gen-tie line corridor experience ambient noise levels ranging from 63 dBA Ldn and 64 dBA Ldn (see Table 3.12-6) and between 34 dBA Leq and 75 dBA Leq (see Table 3.12-7). In addition, these sensitive receptors are exposed to noise levels associated with airport operations at both Edwards AFB and Mojave Air and Space Port. As described above for Impact 3.12-3, the nearest sensitive receptors from the project site at 100 feet away from the roadway centerline would experience noise levels of approximately 87 dBA Leq, an increase of 32 dBA. Along the proposed gen-tie line corridor, the maximum noise level is estimated to be 75-80 dBA at 50 feet from the nearest sensitive receptor, an increase ranging from 0 dBA to 46 dBA. The increases during construction would be intermittent and temporary as it would only occur during activities located near the site boundary. In addition, implementation of Mitigation Measures MM 3.12-1a and MM 3.12-2a for the solar facility portion of the project site, as well as Mitigation Measures 3.12-1b and 3.12-2b for the gen-tie portion of the site, would help reduce impacts to sensitive receptors within 1,000 feet of the project. Once operational, this increase in noise levels would not occur and would be similar, if not the same, as existing ambient levels. Therefore, implementation of the proposed project would not result in the exposure of people at the project site to excessive noise levels. Impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.12-1a and MM 3.12-2a, as well as Mitigation Measures 3.12-1b and 3.12-2b (see Section 3.12.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.12.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Alternative B includes the construction, operation, and decommissioning of a solar facility located within the same site as Alternative A, however, Alternative B would involve construction of solar arrays on approximately one-third of the acreage and construction-related ground disturbance associated with Alternative A. Alternative B would utilize the same gen-tie line route options proposed in Alternative A. While impacts to sensitive receptors during construction would be similar to those discussed for Alternative A, Alternative B would only include construction of solar arrays on the western boundary of the site (along Lone Butte Road and eastern Trotter Avenue). Specifically, the nearest sensitive receptors to the solar facility under Alternative B would be approximately 350 feet, in comparison to approximately 100 feet under Alternative A. Therefore, impacts to sensitive receptors located on Trotter Avenue along the eastern portion of the site would be reduced compared to Alternative A. However, because Alternative B would utilize the same gen-tie line route options, the nearest sensitive receptor would remain at approximately 50 feet and impacts to sensitive receptors along the proposed gen-tie route corridor would remain the same.

In addition, because of the reduced acreage of this alternative, construction of Alternative B would require less time to construct than Alternative A, resulting in a reduction in the duration that construction noise would occur. Further, construction activities located within 1,000 feet of an occupied residential dwelling are prohibited between the hours of 9:00 p.m. and 6:00 a.m. on weekdays, and between 9:00 p.m. and 8:00 a.m. on weekends pursuant to the Kern County Noise Ordinance (Chapter 8.36 of the Kern County Municipal Code). Mitigation Measures MM 3.12-1a and MM 3.12-2a for the solar facility portion of the project site, as well as Mitigation Measures 3.12-1b and 3.12-2b for the gen-tie portion of the site, would be required when construction activities occur within 1,000 feet of a sensitive receptor to further reduce effects. Additionally, over the anticipated two-year construction period, construction activities would not continually be located at the project boundary (nearest to the sensitive uses), therefore, they would not continually be exposed to the highest noise levels.

Operation and Maintenance

Alternative B would result in similar noise level effects as described for Alternative A. However, because of the reduced size of this alternative, the geographic area within Alternative B would be smaller than that of Alternative A. This smaller size would limit the area within which noise levels experienced by the public could be generated. Consequently, noise levels associated with operation and maintenance of Alternative B would be reduced relative to Alternative A. As described in the NEPA analysis for Alternative A, the noise level of transformers at the nearest sensitive receptor would be approximately 20 dBA, and noise from the proposed gen-tie line would be less than 44 dBA, which would be less than the 65 dBA Ldn for outdoor activity areas, as outlined in the Kern County Municipal Code (Chapter 8.36, Noise Control). In addition, noise levels associated with operation of Alternative B would be reduced further relative to Alternative A and Alternative B would be in compliance with the Kern County Noise Ordinance. Therefore, there would be no long-term effects on existing ambient noise and vibration levels from operations and maintenance of the Alternative B.

Decommissioning

Alternative B would result in similar decommissioning-related noise level effects as Alternative A. The reduced scale of Alternative B would likely reduce the amount of time heavy machinery would be onsite during decommissioning. Consequently, excessive noise level effects to sensitive receptors associated with the decommissioning during Alternative B would be reduced relative to Alternative A.

CEQA: Impact Significance Determination

Construction, Operation and Maintenance, and Decommissioning

The impact statements and CEQA significance determinations identified for Alternative A also apply to Alternative B. Because Alternative B would only include construction of solar arrays on the western boundary of the site (along Lone Butte Road and eastern Trotter Avenue), the nearest sensitive receptors to the solar facility under Alternative B would be approximately 350 feet from the solar facility, in comparison to approximately 100 feet under Alternative A. Therefore, temporary noise increases at sensitive receptors located on Trotter Avenue along the eastern portion of the site would be reduced. However, as Alternative B would utilize the same gen-tie line route options, the nearest sensitive receptor would remain at approximately 50 feet and impacts to sensitive receptors along the proposed gen-tie route corridor would remain the same. Similar to Alternative A, Alternative B would comply with all applicable noise standards and ordinances. Thus, Impact 3.12-1 would be less than significant for Alternative B. Mitigation Measures MM 3.12-1a and MM 3.12-2a for the solar facility portion of the project site, as well as Mitigation Measures 3.12-1b and 3.12-2b for the gen-tie portion of the site, would be required when construction activities occur within 1,000 feet of a sensitive receptor to further reduce impacts. Alternative B would result in a temporary increase in ambient noise during construction. The sound level experienced by the nearest sensitive receptor would be the same as estimated for Alternative A. However, Alternative B would require less time to construct, and construction noise would occur over a shorter period of time. Compliance with the Kern County Noise Ordinance construction hours and noise levels would ensure that the project would not generate temporary or periodic noise in excess of established noise standards. Therefore, Impact 3.12-2 would be less than significant. Alternative B would result in a smaller workforce during construction, and construction work would occur over a shorter period of time. Therefore, fewer workers would be exposed to aircraft noise under Alternative B. In addition, impacts resulting from aircraft noise would be less than significant due to the distance of Edwards AFB runways from the solar facility site and gen-tie route options, the lack of habitable structures, and the proximity of existing sensitive uses. Therefore, Impact 3.12-3 would be less than significant for Alternative B.

Mitigation Measures

Implement Mitigation Measures MM 3.12-1a and MM 3.12-2a, as well as Mitigation Measures 3.12-1b and 3.12-2b (see Section 3.12.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.12.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Construction, Operation and Maintenance, and Decommissioning

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to on-site conditions or the existing environmental setting as described above. There would be no construction vehicles and/or employees to access the project site. Thus, Alternative C would not significantly affect noise levels during the construction, operation and maintenance, and decommissioning phases.

CEQA: Impact Significance Determination

Construction, Operation and Maintenance, and Decommissioning

As described above in the NEPA analysis, under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described above. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

3.12.4 Cumulative Impact Analysis

3.12.4.1 NEPA: Cumulative Environmental Effects and Their Significance

As shown in Table 3-1, multiple projects, including several utility-scale solar and wind energy production facilities, are proposed throughout Kern and Los Angeles Counties. Many, like the project site, are located in the Mojave Desert. The Recurrent Energy (RE) Columbia 3 solar energy project located four miles northwest of the solar facility is the nearest project to the solar facility site. The following projects are located within the vicinity of the gen-tie line corridor:

- RE Columbia
- RE Columbia Two
- RE Columbia 3
- RE Rio Grande
- High Desert Solar
- The Aeromen LLC
- Mojave Solar Park by Cal West
- Golden Queen Mining Company

Due to the localized nature of noise impacts, the Proposed Action would not contribute to significant cumulative noise impacts. Construction activities associated with other projects in proximity to the project site could occur at the same time as the Proposed Action. These related projects would also be subject to Kern County noise standards and established thresholds pertaining to increased noise at the locations of sensitive receptors, as well as similar mitigation measures. When considered with other past, present, and reasonably foreseeable future projects, the Proposed Action would not result in a cumulatively considerable contribution to adverse noise effects in the vicinity of the project site.

3.12.4.2 CEQA: Cumulative Impact Significance Determination

Cumulative impacts would be the same as those described above under the NEPA analysis; cumulative impacts related to excessive ambient noise levels would be less than significant with implementation of Mitigation Measures MM 3.12-1a and MM 3.12-2a for the solar facility portion of the project site, as well as Mitigation Measures 3.12-1b and 3.12-2b for the gen-tie portion of the site.

Mitigation Measures

Implement Mitigation Measure MM 3.12-1a and MM 3.12-2a, as well as Mitigation Measures 3.12-1b and 3.12-2b (see Section 3.12.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be less than significant.

3.12.5 Mitigation Measures

3.12.5.1 Solar Facility Mitigation Measures

MM 3.12-1a: Noise Reduction. To reduce temporary construction related noise impacts, the following shall be implemented by the project proponent:

1. Equipment staging shall be located in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during construction to the extent practical. The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site, where feasible.
2. The contractor shall ensure all construction equipment is equipped with manufacturers approved mufflers and baffles, where feasible.
3. The construction contractor shall establish a Noise Disturbance coordinator for the project during construction. The Disturbance Coordinator shall be responsible for responding to any complaints about construction noise. The Disturbance Coordinator shall determine the cause of the complaint and shall be required to implement reasonable measures to resolve the complaint. Contact information for the Disturbance Coordinator shall be submitted to the Kern County Planning and Natural Resources Department prior to any ground disturbing activities commence.
4. During all construction or decommissioning phases of the project, the construction contractor shall limit all on-site noise-producing activities to the hours of 6:00 a.m. to 9:00

p.m., Monday through Friday, and to the hours of 8:00 a.m. and 9:00 p.m. on Saturdays and Sunday or as required through the Kern County Noise Ordinance (Municipal Ordinance Code 8.36.020).

MM 3.12-2a: Public Notification. Prior to commencement of any on-site construction activities (i.e., fence construction, mobilization of construction equipment, initial grading, etc.), the project proponent shall provide written notice to the public through mailing a notice.

1. The mailing notice shall be to all residences within 1,000 feet of the project site, 15 days or less prior to construction activities. The notices shall include: The construction schedule, telephone number and email address where complaints and questions can be registered with the noise disturbance coordinator.
2. A minimum of one sign, legible at a distance of 50 feet, shall be posted at the construction site or adjacent to the nearest public access to the main construction entrance throughout construction activities that shall provide the construction schedule (updated as needed) and a telephone number where noise complaints can be registered with the noise disturbance coordinator.
3. Documentation that the public notice has been sent and the sign has been posted shall be provided to the Air Force and to Kern County.

3.12.5.2 Gen-tie Mitigation Measures

MM 3.12-1b: Noise Reduction. To reduce temporary generation-tie line construction related noise impacts, the following shall be implemented by the project proponent:

1. In the event a noise sensitive receptor is constructed within 1,000 feet of the tie-line site:
   a. Equipment staging shall be located in areas that will create the greatest distance between generation tie-line construction-related noise sources and noise sensitive receptors nearest the tie-line site during generation tie-line construction to the extent practical.
   b. The project contractor shall place all stationary tie-line construction equipment so that emitted noise is directed away from sensitive receptors nearest the gen-tie line site.
2. The construction contractor shall ensure all generation tie-line construction equipment is equipped with manufacturers approved mufflers and baffles.
3. The construction contractor shall establish a Noise Disturbance coordinator for the project during construction of the generation tie lines. The Disturbance Coordinator shall be responsible for responding to any complaints about construction noise. The Disturbance Coordinator shall determine the cause of the complaint and shall be required to implement reasonable measures to resolve the complaint. Contact information for the Disturbance Coordinator shall be submitted to the Kern County Planning and Natural Resources Department prior to commencement of any ground disturbing activities.
4. During all construction or decommissioning phases of the generation tie-lines, the construction contractor shall limit all on-site noise-producing activities to the hours of 6:00 a.m. to 9:00 p.m., Monday through Friday, and to the hours of 8:00 a.m. and 9:00 p.m. on Saturdays and Sunday or as required through the Kern County Noise Ordinance (Municipal Ordinance Code 8.36.020).

MM 3.12-2b: Public Notification. Prior to commencement of any generation tie line construction activities (i.e., mobilization of construction equipment, initial grading, etc.), the project proponent shall provide written notice to the public through mailing a notice.

1. The mailing notice shall be to all residences within 1,000 feet of the gen-tie sites, 15 days or less prior to generation tie-line construction activities. The notices shall include: The construction schedule, telephone number and email address where complaints and questions can be registered with the noise disturbance coordinator.
2. A minimum of one sign, legible at a distance of 50 feet, shall be posted at the generation tie line construction site or adjacent to the nearest public access to the main construction entrance throughout construction activities that shall provide the generation tie line construction schedule (updated as needed) and a telephone number where noise complaints can be registered with the noise disturbance coordinator.
3. Documentation that the public notice has been sent and the sign has been posted shall be provided to the Kern County Planning and Natural Resources Department.

3.12.6 Residual Impacts after Mitigation

Mitigation Measures MM 3.12-1a and MM 3.12-1b would substantially reduce potential noise impacts associated with the project to a less than significant level. There are currently no other impacts that are expected to occur as a result of construction, operation and maintenance, and/or decommissioning of the proposed project.

3.13 Public Services

3.13.1 Affected Environment

This EIS/EIR section describes the affected environment for public services in the proposed project area, including the regulatory and environmental setting, fire, police protection, schools, parks, scenic trails, medical services, and other public facilities. This section also addresses the potential impacts on public services that would result from implementation of the proposed project, and the mitigation measures that would reduce these potential impacts. Information for this section was taken from numerous sources, including the Kern County General Plan, local fire protection and law enforcement agencies, and other service agency plans.

3.13.1.1 Scoping Issues Addressed

During the scoping period for the EIS/EIR (November 27, 2017, through December 27, 2017), one public scoping meeting was conducted, and written comments provided from the California Department of Transportation (Caltrans) were received that identified the following issues and concerns related to Public Services, which are addressed in this section:

- Installation and maintenance of utilities within the State Highway right-of-way must be done per Caltrans standards under permit.

3.13.1.2 Regulatory Framework

Federal

The Edwards Air Force Base (AFB) Installation Development Plan, Section 3.10, *Infrastructure*, describes the services and facilities available to the site and surrounding areas. This section of the plan states the necessary procedures as related to public services.

The County of Kern and Edwards Air Force Base Mutual Aid in Fire Protection and Hazardous Materials Incident Response Protection is an agreement that describes the County's and Edwards AFB's response to fire and hazardous waste events on a mutual basis. The agreement states that Edwards AFB will provide fire-fighting equipment and personnel to any point within the area for which the County normally provides fire or hazardous material protection, and vice versa.

State

Under Title 14 of the California Code of Regulations (CCR), the California Department of Forestry and Fire Protection (CAL FIRE) has the primary responsibility for implementing wildfire planning and protection for State Responsibility Areas (SRAs). In addition to wildland fires, CAL FIRE's planning efforts involve responding to other types of emergencies, including residential or commercial structure fires, automobile accidents, heart attacks, drowning victims, lost hikers, hazardous material spills on highways, train wrecks, floods, and earthquakes.

Local

Kern County applies and uses the National Fire Code set forth by the National Fire Protection Association, the California Fire Code, the California Building Code, and the Kern County Ordinance Code to regulate fire safety.

Kern County General Plan

The Kern County General Plan Land Use, Open Space, and Conservation Element establishes goals, policies, and implementation measures which require new discretionary developments to pay its proportional share of the local costs of infrastructure improvements required to service such development, including fire protection and police protection. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the Proposed Action. These measures are not listed below, but, as stated in Chapter 1, *Introduction*, all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Chapter 1. Land Use, Conservation, and Open Space Element

1.4 Public Facilities and Services

Policies

Policy 1: New discretionary development will be required to pay its proportional share of the local costs of infrastructure improvements required to service such development.

Policy 6: The County will ensure adequate fire protection to all Kern County residents.

Policy 7: The County will ensure adequate police protection to all Kern County residents.

Implementation Measures

Measure A: Continue to administer the Capital Improvement Program (CIP) and coordinate with public utility providers listing the necessary improvements to Kern County's public services and facilities in collaboration with key service-providing agencies and the County Administrative Office as a first step toward the preparation of a long-term Public Services Plan for Kern County. This plan addresses the projected demand for public services throughout the County in comparison with projected revenues and identifies long-term financial trends for the major public service providers. The CIP and General Plan can assure compliance with the provisions of Government Code Sections 65401 and 65402 which require review of all capital facility decisions for consistency with this General Plan.

Measure L: Prior to the approval of development projects, the County shall determine the need for fire protection services. New development in the County shall not be approved unless adequate fire protection facilities and resources can be provided.

1.10 General Provisions

Goal

Goal 1: Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous

economy by preserving viable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

1.10.1 Public Services and Facilities

Policies

Policy 9: New development should pay its pro rata share of the local cost of expansions in services, facilities, and infrastructure that it generates and upon which it is dependent.

Policy 15: Prior to approval of any discretionary permit, the County shall make the finding, based on information provided by the California Environmental Quality Act (CEQA) documents, staff analysis, and the applicant, that adequate public or private services and resources are available to serve the proposed development.

Policy 16: The developer shall assume full responsibility for costs incurred in service extension or improvements that are required to ensure the project. Cost sharing or other forms of recovery shall be available when the service extensions or improvements have a specific quantifiable regional significance.

Kern County General Plan Chapter 4. Safety Element

4.6 Wildland and Urban Fire

Policies

Policy 1: Require discretionary projects to assess impacts on emergency services and facilities.

Policy 3: The County will encourage the promotion of fire prevention methods to reduce service protection costs and costs to taxpayers.

Policy 4: Ensure that new development of properties have sufficient access for emergency vehicles and for the evacuation of residents.

Policy 6: All discretionary projects shall comply with the adopted fire code and the requirements of the fire department.

Implementation Measure

Measure A: Require that all development comply with the requirements of the Kern County Fire Department or other appropriate agency regarding access, fire flows, and fire protection facilities.

The Mojave Specific Plan identifies policies, goals, and implementation measures that would provide for adequate public facilities and services within the Specific Plan area.

The South of Mojave-Elephant Butte Specific Plan states as the community grows, the need for public buildings and grounds increase, and that the Fire, Police, and Library Departments report sufficient facilities at this time.

The West Edwards Road Settlement Specific Plan establishes goals, policies, and implementation measures intended to provide adequate public services and facilities to meet current and projected community needs. Prior to development, the developer must complete plans of a mutual water company and public sewer system and be approved by the appropriate government agency.

The Willow Springs Specific Plan identifies policies, goals, and implementation measures that would provide for adequate public facilities and services within the Specific Plan area. The plan includes requiring new development pay its proportional share of the local costs of infrastructure improvements required to service such development.

There are no goals, policies, or implementation measures within the Actis Interim Rural Community Plan that apply to Public Services.

The County of Kern Capital Improvement Plan identifies new public facilities that will be needed to serve the County's projected development through 2030. The scope of services includes parks, libraries, sheriff (public protection and investigation), fire, animal control, public health, landfill/transfer stations, and general government.

The purpose of Kern County's Public Facilities Mitigation Program is to identify those impacts on public services and identify the monetary mitigation necessary to provide the facilities associated with that growth.

3.13.1.3 Environmental Setting

Regional Setting

Fire Protection Services

The Kern County Fire Department (KCFD) is responsible for fire protection services, fire prevention, emergency medical and rescue services, arson investigation, and hazardous materials coordination. The KCFD operates 46 full-time fire stations and one seasonal station, and is divided into seven battalions for operational management. Currently, the KCFD is staffed with approximately 550 uniformed firefighters, 157 on-duty personnel, 79 non-uniformed (civilian) personnel, and 100 other support personnel, for a total of 886 KCFD personnel (KCFD, 2018). The KCFD is equipped with 55 fire engines, 4 ladder trucks, 41 patrol vehicles, 25 command vehicles, 5 dozers, 2 helicopters, 2 hazardous material response teams, and other ancillary vehicles and equipment (KCFD, 2018).

The closest KCFD fire stations to the project site are Station No. 15 at 3219 35th West Street in Rosamond and Station No. 14 at 1953 Highway 58 in Mojave. Both stations are approximately 6 miles from the project site. Both stations are located within Battalion 1, which serves the southeastern portion of Kern County. Battalion 1 covers an area of nearly 351,276 acres and consists of seven permanent stations and one seasonal station (KCFD, 2018).

Edwards AFB Fire Protection Division administers 5 fire stations on base. KCFD and Edwards AFB Fire Protection Division have a mutual-aid agreement that states that Edwards AFB will provide fire-fighting equipment and personnel to any point within the area for which the County of Kern normally provides fire or hazardous material protection, and vice versa. Upon request of either KCFD for Edwards AFB Fire Protection Division (or vice versa) to supply aid, fire-fighting equipment and personnel would be dispatched to any point within the area of jurisdiction of the requesting organization as designated by a representative of the requesting organization. The responding organization would report to the officer in charge of the requesting organization. The

requested quantity and type of equipment and personnel would be granted by the responding organization as deemed appropriate.

KCFD Station No. 14 and Station No. 15 would be the primary responders to a fire or emergency at the project site; however, in the event of a major fire, other resources would be called on to respond as necessary.

Police Protection and Law Enforcement Services

Kern County Sheriff's Office

Police protection services in Kern County are provided by the Kern County Sheriff's Office, including patrolling off-highway vehicle recreation areas in the desert and mountainous areas of the County. The nearest sheriff's station is located approximately 6 miles northeast of the project site, at 1771 Highway 58 in Mojave, California.

The Kern County Sheriff's Office consists of 14 substations that provide patrol services. Substations are staffed by police, investigators, and supervisors, and each substation has access to all department support services. Currently, the Kern County Sheriff's Department is staffed with 1,202 sworn and civilian employees, 567 deputy sheriffs, 338 detention deputy positions, and 297 professional support staff (Kern County Sheriff's Office, 2018). The nearest substation to the project site is the Rosamond substation, located approximately 3 miles west of the project site.

In 2001, the Kern County Sheriff's Office created the Off-Highway Vehicle Enforcement Team, which can be deployed anywhere in Kern County as needed. The Off-Highway Vehicle Enforcement Team's mission is to provide a law enforcement presence and patrol to those remote areas of Kern County that are not readily accessible by normal means. The Kern County desert area is host to hundreds of thousands of visitors during the off-highway vehicle season. Although exact numbers are not available, it is estimated that more than 500,000 visitors in the East Kern area alone participate in outdoor activities policed by the Off-Highway Vehicle Enforcement Team. Areas where off-highway vehicle activities occur include the Rosamond/Mojave Desert area and Tehachapi Mountains.

The Mojave substation would be the primary substation for police protection services for the proposed project and surrounding area. The substation geographically covers around 1,320 square miles, giving it one of the largest response areas of Kern County's substations. It provides law enforcement services to around 14,000 people and serves the greater Mojave area, including the communities of Cantil, Fremont Valley, Boron, North Edwards, Aerial Acres, Desert Lake and the military complexes at Edwards AFB. It is just over 6 miles to the east of the project site, located at 1771 Highway 58 in the community of Mojave (KCSO, 2015).

Response time to an incident at the project site would vary depending on the severity of the emergency, the number of deputies on duty, and where deputies are located when a call is received.

The average response time for the Sheriff's Office, measured from the time a service call is received until the time a patrol car arrives at the scene, is 5 minutes or less for an emergency or immediate-response incident (e.g., a crime that is under way and/or a life-or-death situation) and 8 to 10

minutes for routine calls (e.g., a crime that has already occurred and/or an incident that is not life-threatening). Response time to an emergency at or near the project site would vary depending on the location of nearest responding patrol and the level of demand at the substation at the time of the call. If demand is high, the response time will be longer than the average times given above. The response time for a nonemergency call could be eight minutes or more, depending on staffing and the number of other calls for service.

California Highway Patrol

As a major statewide law enforcement agency, the California Highway Patrol (CHP) is responsible for managing and regulating traffic for the safe, lawful, and efficient use of California highways. The agency also provides disaster and lifesaving assistance. The primary purpose of the CHP is to ensure highway safety and provide service to the public. When requested, it also assists local governments during emergencies. The CHP patrols state highways and all County roadways, enforces traffic regulations, responds to traffic accidents, and provides service and assistance to disabled vehicles. The CHP has a mutual aid agreement with KCSO.

The CHP provides traffic regulation enforcement, oversees response to emergency incidents on California's highways or assists other public agencies responding to emergency incidents, and promotes the safe and efficient movement of people and goods on California highways to minimize loss of life, injuries, and property damage. CHP officers patrol 105,000 miles of roadway and implement the CHP's other law enforcement activities (e.g., drug interception, vehicle theft investigation and prevention, vehicle inspections, accident investigations, and public awareness campaigns) with the support of the non-uniformed personnel assigned to area and division offices (CHP, 2014a).

The CHP has eight divisions that provide services in eight areas in California. The project site is within the jurisdiction of the Inland Division. The Inland Division has 11 offices with 650 uniformed officers (Wood, 2015). The nearest Inland Division office to the project site is in the community of Mojave, 4.5 miles northwest of the site (CHP, 2014b).

3.13.2 Environmental Consequences

This section describes the environmental consequences relating to public services for Proposed Action. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.13.2.1 Assessment Methods/Methodology

Public services in the area were evaluated to determine the availability of needed services for the Proposed Action and to address the potentially adverse impacts the Proposed Action may have on public service facilities. This evaluation included consideration of the existing location and staffing of public service entities, future capacity requirements of public services, and contact with staff at various public services agencies.

3.13.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant related to public services if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice. The Kern County California Environmental Quality Act (CEQA) Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in Appendix G of the CEQA Guidelines, to determine if a project could potentially have a significant adverse effect on public services.

A project could have a significant adverse effect on public services if it results in substantial adverse physical impacts associated with the need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

- Fire Protection
- Police Protection
- Schools
- Parks
- Other Public Facilities

The lead agency determined in the NOP that the following environmental issue areas would result in no impacts or a less than significant impact and were therefore scoped out of requiring further review in this EIS/EIR. Refer to Appendix A1 of this EIS/EIR for a copy of the NOP and additional information regarding these issue areas:

- Schools
- Parks
- Other Public Facilities

3.13.3 Analysis of Environmental Effects

3.13.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Fire Protection

Fire protection facilities requirements are based on the number of residents and workers in the service area. Service demand is primarily tied to population, not building size, because emergency medical calls typically make up the majority of responses provided by the fire department. As the number of residents and workers increases, so does the number of emergency medical calls. There are no residential structures on the project site, and none would be constructed under the proposed project. Therefore, no residents would occupy the proposed project and service demands per resident would not increase.

Service demands per employee are less than service demands per resident; nevertheless, the addition of construction and operational personnel to the area would result in a demand for fire protection services to accommodate fire suppression and emergency medical calls. The construction workforce may consist of as many as 100 to 550 workers onsite daily during project construction. The presence of construction workers on site would be temporary. During operations, the facility is expected to be staffed with 10 full-time personnel for operation, maintenance, and security of the solar facility. Construction and operation of the proposed project would generate truck and employee traffic along haul routes and at the project site, which could temporarily increase the need for fire services but new or physically altered KCFD facilities would not be required to accommodate this increased demand. Thus, this impact is considered less than significant. The developer would also be required to pay Kern County development impact fees for fire protection infrastructure. While this impact is considered less-than-significant without mitigation, Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, provide further assurances of payment of fees and implementation of a fire safety plan.

The project would comply with all Kern County Fire Code requirements. Fire protection measures of the project may include portable carbon dioxide (CO_2) fire extinguishers and/or the electrical enclosures that contain the inverters and medium voltage transformers. Additionally, fire protection for the solar array and the gen-tie would incorporate vegetation management programs. Within the solar array, vegetation would be controlled to minimize fire risk. For the gen-tie, clearance for vegetation would be implemented in accordance with California Public Utility Code General Order 95 (Rules for Overhead Electric Line Construction). In addition, construction and operation of the project would be subject to the provisions of the Uniform Fire Code and local amendments; Titles 19, 22, and 27 of the California Safety Code Regulations; the Kern County Ordinance Code; and the National Fire Prevention Association Standards.

Because the project site is adjacent to natural land, construction and operation of the project could result in increased risk of wildfires in the area. The project site is within an area of moderate fire hazard (CAL FIRE, 2007a; CAL FIRE, 2007b), Mitigation Measure MM 3.9-6a for the solar facility portion of the project site and Mitigation Measure MM 3.9-8b for the gen-tie portion of the project, which would implement a fire safety plan during construction and operation, includes measures to reduce the risk of fire at the project site.

Police Protection

The project would include a temporary influx of construction workers and a small number of permanent staff. Although service demands per employee would be less than service demands per resident, construction and operation of the proposed project could increase the level of demand for services from the Sheriff's Office. The project may attract vandals or present other security risks and potentially increase traffic. However, the project site is in a relatively remote location on Edwards AFB. It is surrounded by undeveloped land and rural communities and is unlikely to attract attention that would make the project facility susceptible to crime. Fencing and onsite security would be provided and access would be limited to the areas surrounding the sites during construction and operation, thereby minimizing the need for sheriff surveillance and response.

Construction activities associated with the project may increase traffic volumes along surrounding roads and highways; however, the additional volume of traffic associated with workers commuting to the site during construction would be temporary and is not expected to adversely affect the CHP's ability to patrol the highways. Temporary construction personnel and the 10 long-term operational staff are not expected to significantly impact the capacity of the existing police services in the area and would not result in the need for new or altered facilities. Implementation of Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, would further reduce any potential impacts to police services during construction and operation of the project by providing monetary compensation to the Sheriff's Office to ensure adequate resources are available.

CEQA: Impact Significance Determination

Impact 3.13-1: The project would result in adverse physical impacts associated with the need for new or physically altered governmental facilities—the construction of which could cause significant environmental impacts—in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services or police protection and law enforcement services.

The project site is within an area of moderate fire hazard, as determined by CAL FIRE (CAL FIRE, 2007a; CAL FIRE, 2007b). No residential structures exist or would be constructed under the proposed project. The project would include the development of a solar photovoltaic energy generation facility anticipated to be greater than 100 megawatts on up to 4,000 acres of non-excess land at Edwards AFB. The construction workforce may consist of as many as 100 to 550 daily workers during peak project construction. The project would be staffed by up to 10 full-time personnel for operation, maintenance, and security of the solar facility. Emergency access and other safety features and plans for fire protection are typically included in the project plans.

As described, fire protection facilities requirements are based on the number of residents and workers in the KCFD primary service areas. Service demand is primarily tied to population, not building size, because emergency medical calls typically make up the majority of responses provided by the fire department. As the number of residents and workers increases, so does the number of emergency medical calls. Service demands per employee are less than service demands per resident; nevertheless, the addition of construction and operational personnel to the area would result in a demand for fire protection services to accommodate fire suppression and emergency medical calls. Construction and operation of the proposed project would generate truck and employee traffic along haul routes and at the proposed site, which could temporarily increase the need for fire and sheriff services, but new or physically altered KCFD and Edwards AFB fire-fighting facilities would not be required to accommodate this increased demand, so this impact is considered less than significant. The developer would also be required to pay appropriate Kern County development impact fees for fire protection infrastructure. While this impact is considered less than significant without mitigation, Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, provide further assurances of payment of fees and implementation of a fire safety plan.

Construction and operation of the project could increase service needs for the Kern County Sheriff's Office. The proposed project may attract vandals or present other security risks and potentially increase traffic. However, the project site is in a relatively remote location on Edwards AFB. It is surrounded by undeveloped land and rural communities and is unlikely to attract attention that would make the project facility susceptible to crime. Moreover, onsite security would be provided during the construction and operation of the project and access would be limited to the areas surrounding the site during construction and operation via fencing and gates, thereby minimizing the need for sheriff surveillance and response.

Construction activities may increase traffic volumes along surrounding roads and highways; however, the additional volume of traffic associated with workers commuting to the sites during construction would be temporary and is not expected to adversely affect the CHP's ability to patrol the highways. The number of permanent full-time employees is expected to be relatively low and therefore not adversely affect the CHP's ability to patrol the highways. New or physically altered Kern County Sheriff's Office or CHP facilities would not be required to accommodate the limited increase in needs from the project and impacts to police services are less than significant. The developer would also be required to pay appropriate Kern County development impact fees for sheriff services. While this impact is considered less than significant without mitigation, Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, would further assure the payment of fees.

Mitigation Measures

Mitigation Measures MM 3.13-1a, MM 3.13-1b, MM 3.9-6a, and MM 3.9-8b (see Sections 3.9.5 and 3.13.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.13.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Alternative B includes the construction of a utility-scale PV solar facility on maximum of 1,500 acres of land located within the same site as Alternative A. Because of the reduced scale of Alternative B, this alternative would require fewer construction workers and operations staff compared to Alternative A. Therefore, potential effects on fire and police services would likely be reduced. Like Alternative A, the developer would be required to pay Kern County development impact fees that would cover Alternative B's incremental increase on demand for police and fire protection services. Impacts to public services as a result of implementation of Alternative B are not expected to be significant. However, Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, would further assure the payment of fees and implementation of a fire safety plan.

CEQA: Impact Significance Determination

Because Alternative B would result in less physical development than Alternative A, this alternative would require fewer construction workers and operations staff. Because impacts to fire and police services are based on the number of workers in the project area, Alternative B would result in fewer impacts to fire and police services compared to Alternative A and impacts would be less than significant. While this impact is considered less than significant without mitigation, Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, provide further assurances of payment of fees and implementation of a fire safety plan.

Mitigation Measures

Mitigation Measures MM 3.13-1a, MM 3.13-1b, MM 3.9-6a, and MM 3.9-8b (see Sections 3.9.5 and 3.13.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

3.13.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described earlier. Therefore, there would be no increase in construction and operations staff in the project area and Alternative C would result in no impacts regarding fire and police services and no mitigation would be required.

CEQA: Impact Significance Determination

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions and no need for construction or operations staff at the project site. Therefore, there would be no change in the need for fire and police services and Alternative C would result in no impacts to public services and no mitigation is required.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No Impact.

3.13.4 Cumulative Impact Analysis

3.13.4.1 NEPA: Cumulative Environmental Effects and Their Significance

The developer would be required to pay a fee assigned by the Kern County Planning and Natural Resources Department over the life of the proposed project in order to mitigate any potential

impacts to fire or police protection services resulting from the project. With payment of the required mitigation fee as assessed by the Kern County Planning and Natural Resources Department, any additional fire or police protection services, facilities, or personnel required as a result of the proposed project would be appropriately funded. Therefore, the proposed project would not create an adverse cumulative impact related to police, fire protection, or other public services.

Similar to the proposed project, all of the related projects listed in Table 3-1, would also be required to pay this mitigation fee, if deemed appropriate by the Kern County Planning and Natural Resources Department. These projects would also be required to undergo environmental review, in compliance with the requirements of NEPA and/or CEQA. Should potential impacts to public services be identified, appropriate mitigation would be prescribed that would minimize impacts to public services. Therefore, because the project would not create a significant effect on public services, and the other related projects would also be expected to avoid or mitigate impacts on public services, cumulative impacts would be avoided and/or minimized.

3.13.4.2 CEQA: Cumulative Impact Significance Determination

The cumulative study area is based on the service area for each of the fire and police offices serving the project site. The related projects listed in Table 3-1, could incrementally increase the need for fire and police services in the project area.

Development in the project vicinity, including residential, renewable energy, and commercial, has increased over the last century. Public services for fire and crime prevention have expanded to serve this increased development and population growth, but the potential for fire and crime is still higher than if no development occurred.

Impacts from several related projects in the vicinity of the proposed project could combine to result in cumulative impacts to police and fire services. These cumulative projects include the RE Columbia, RE Columbia 2, RE Columbia 3, RE Rio Grande, RE Rosamond One, RE Rosamond Two, RE Great Lakes project, High Desert Solar, and Mojave Solar Park by Cal West Energy. While the proposed project site is located in a relatively remote location on Edwards AFB, it is surrounded by undeveloped land and rural communities, and is unlikely to attract attention that would make the project facility susceptible to crime, the influx of construction workers for the proposed project and surrounding projects would increase the potential for crimes to occur, which may result in the need for increased support from local law enforcement. These cumulative projects when combined with the proposed project could also lead to increased demand for fire services. The addition of construction and operational equipment and personnel to the area would result in increased risk of fire ignition and therefore increased demand for fire protection and emergency services. However, with implementation of Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, the developer would be required to pay a fee assigned by the Kern County Planning and Natural Resources Department over the life of the proposed project to mitigate any potential impacts to fire or police protection services resulting from the proposed project and to fund any additional fire or police protection services required as a result of the proposed project. With payment of the required mitigation fee, any additional fire or police protection services, required as a result of the proposed project would be appropriately funded.

Therefore, the proposed project would not create a cumulatively considerable impact related to police or fire protection services and would have a less-than-significant cumulative impact. While this impact is considered less than significant without mitigation, Mitigation Measures MM 3.13-1a, MM 3.13-1b, MM 3.9-6a, and MM 3.9-8b, would provide assurance of payment of fees.

Similar to the proposed project, the related projects listed in Table 3-1 would also be required to pay mitigation fees and undergo environmental review. Should potential impacts to public services be identified, appropriate mitigation would be prescribed. Therefore, because the project would not create a significant impact on public services, and the other related projects would also be expected to avoid or mitigate impacts on public services, cumulative significant impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.13-1a, MM 3.13-1b, MM 3.9-6a, and MM 3.9-8b (see Sections 3.9-5 and 3.13.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be less than significant.

3.13.5 Mitigation Measures

3.13.5.1 Solar Facility Mitigation Measures

MM 3.13-1a: Funding for County Fire and Sheriff's Protection. The Kern County Fire and Sheriff's departments shall provide public services for the solar facility site at the Edwards Solar Project. In order to provide funding for this service as is normally required of solar projects, the project proponent shall implement the following mitigation steps:

1. For facility operation, the project proponent shall pay for impacts on countywide public protection, sheriff's patrol and investigative services, and fire services at a rate of $28.84 per 1,000 square feet of panel-covered ground for the facility operation and related on-site structures for the entire covered area of the project. The total amount shall be divided by the number of years of operation and paid on a yearly basis. If completed in phases, the annual amount shall be based on the square footage of ground covered by April 30 of each year. The amount shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year for each and every year of operation. Copies of payments made shall be submitted to the Kern County Planning and Natural Resources Department.
2. Written verification of ownership of the project shall be submitted to the Kern County Planning and Natural Resources Department by April 15 of each calendar year. If the project is sold to a city, county, or utility company with assessed taxes that total less than $1,000 per megawatt per year, then they will pay those taxes plus the amount necessary to equal the equivalent of $1,000 per megawatt. The amount shall be paid for all years of operation. The fee shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year.
3. The project proponent shall work with the County to determine how the use of sales and use taxes from construction of the project can be maximized. This process shall include, but is not necessarily limited to, the project proponent obtaining a street address within the unincorporated portion of Kern County for acquisition, purchasing and billing purposes,

and registering this address with the State Board of Equalization. The project proponent shall allow the County to use this sales tax information publicly for reporting purposes.

4. Prior to the issuance of any building permits on the property, the project proponent shall submit a letter detailing the hiring efforts prior to commencement of construction; which encourages all contractors of the generation tie line sites to hire at least 50 percent of their workers from the local Kern County communities. The project proponent shall provide the contractors a list of training programs that provide skilled workers and shall require the contractor to advertise locally for available jobs, notifying the training programs of job availability, all in conjunction with normal hiring practices of the contractor.

3.13.5.2 Gen-tie Mitigation Measures

MM 3.9-8b: Prior to the issuance of grading or building permits, the project proponent/operator shall develop and implement a fire safety plan for use during construction, operation and decommissioning. The project proponent/operator shall submit the plan, along with maps of the generation tie-line sites and access roads, to the Kern County Fire Department for review and approval. The fire safety plan shall contain notification procedures and emergency fire precautions including, but not limited to the following:

1. All internal combustion engines, both stationary and mobile, shall be equipped with spark arresters. Spark arresters will be in good working order.
2. Light trucks and cars with factory-installed (type) mufflers will be used only on roads where the roadway is cleared of vegetation. These vehicle types will maintain their factory-installed (type) muffler in good condition.
3. Fire rules will be posted on the project bulletin board at the contractor's field office and areas visible to employees.
4. Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials.
5. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires to prevent them from growing into more serious threats.
6. The project proponent/operator shall make an effort to restrict the use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to periods outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.

MM 3.13-1b: Funding for County Fire and Sheriff's Protection. The project proponent shall implement the following mitigation steps at the project site:

1. For facility operation, the project proponent shall pay for impacts on countywide public protection, sheriff's patrol and investigative services, and fire services at a rate of $28.84 per 1,000 square feet of covered ground the gen-tie area of the project. The total amount shall be divided by the number of years of operation and paid on a yearly basis. If completed in phases, the annual amount shall be based on the square footage of ground covered by April 30 of each year. The amount shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year for each and every year of operation. Copies of payments made shall be submitted to the Kern County Planning and Natural Resources Department.

2. Written verification of ownership of the project shall be submitted to the Kern County Planning and Natural Resources Department by April 15 of each calendar year. If the project is sold to a city, county, or utility company with assessed taxes that total less than $1,000 per megawatt per year, then they will pay those taxes plus the amount necessary to equal the equivalent of $1,000 per megawatt. The amount shall be paid for all years of operation. The fee shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year.
3. The project proponent shall work with the County to determine how the use of sales and use taxes from construction of the project can be maximized. This process shall include, but is not necessarily limited to, the project proponent obtaining a street address within the unincorporated portion of Kern County for acquisition, purchasing and billing purposes, and registering this address with the State Board of Equalization. The project proponent shall allow the County to use this sales tax information publicly for reporting purposes.
4. Prior to the issuance of any building permits on the property, the project proponent shall submit a letter detailing the hiring efforts prior to commencement of construction; which encourages all contractors of the project site to hire at least 50 percent of their workers from the local Kern County communities. The project proponent shall provide the contractors a list of training programs that provide skilled workers and shall require the contractor to advertise locally for available jobs, notifying the training programs of job availability, all in conjunction with normal hiring practices of the contractor.

3.13.6 Residual Impacts after Mitigation

The procedures in the fire safety plan and in Mitigation Measures MM 3.13-1a and MM 3.9-6a for the solar facility portion of the site, and Mitigation Measures MM 3.13-1b and MM 3.9-8b for the gen-tie portion of the project, would minimize environmental impacts. In the case that such procedures have significant impacts, mitigation measures will be developed in accordance with those procedures. No other residual impacts after mitigation exist.

3.14 Socioeconomics and Environmental Justice/ Population and Housing

3.14.1 Affected Environment

This section of the EIS/EIR describes the affected environment for population and housing, otherwise known as socioeconomics and environmental justice, in the proposed project area, including the regulatory and environmental setting.

3.14.1.1 Scoping Issues Addressed

No comments and concerns related to population and housing, socioeconomic issues, or environmental justice were raised during the scoping process.

3.14.1.2 Regulatory Framework

Federal

Under NEPA (42 U.S. Code 4321 et seq.), an EIS must include an analysis of the Proposed Action's economic, social, and demographic effects related to effects on the natural or physical environment in the affected area, but does not allow for economic, social, and demographic effects to be analyzed in isolation from the physical environment.

Title VI of the Civil Rights Act of 1964 (42 U.S. Code [U.S.C.] 2000d et seq.) prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving federal financial assistance.

State

The California Housing Element Law was established to review local government housing elements for compliance with state law and providing written comments to the local government. Using the information provided by local governments in its housing element, the California Department Housing and Community Development determines the regional housing need for each county and allocates funding to meet this need to the council of governments for distribution to its jurisdictions.

Assembly Bill 15 (California Revenue and Taxation Code §73), signed by the California Governor in June 2011, modified and extended existing state law excluding an “active solar energy system” from calculation of cash value subject to property taxation.

Local

The Kern County General Plan Land Use, Open Space, and Conservation Element establishes policies, goals, and implementation measures that would ensure the County can accommodate anticipated growth and development while maintaining a safe and healthful environment and prosperous economy, while also ensuring the fair treatment of people of all races, cultures, incomes, and age groups (see Section 3.10, *Land Use*, for more information).

Because the proposed project would not include any new housing and would not displace any existing housing, the goals and policies of the Housing Element do not apply to the project.

The project is within the following planning areas, however there are no goals, policies, or implementation measures within these plans that apply to socioeconomic or environmental justice issues relevant to the project: Mojave Specific Plan., South of Mojave/Elephant Butte Specific Plan, West Edwards Road Settlement Plan, Willow Springs Specific Plan, and the Actis Interim Rural Community Plan.

The Kern Council of Governments (COG) acts as an area-wide planning agency, assisting local governments with multi-jurisdictional issues such as air quality, transportation, water quality, energy, and housing. The primary function of the Kern COG is to address regional transportation issues, but it also functions as the state-designated Census Data Center Affiliate.

3.14.1.3 Environmental Setting

Socioeconomics

This section of the EIS/EIR establishes the existing population and housing and socioeconomic trends in the region and in the vicinity of the project site. The project site is located within Edwards Air Force Base (AFB) in Kern County, just south and north of the unincorporated rural communities of Mojave and Rosamond, respectively. Larger populations near the project site include California City, located approximately 12 miles to the northeast, the city of Tehachapi, located approximately 20 miles to the northwest, and the city of Lancaster, which is approximately 16 miles south of the project site. Bakersfield, which is the largest city in Kern County, is approximately 55 miles to the northwest (see **Figure 3.14-1**).

The project site is undeveloped. Land uses in the region include a mix of vacant land, agriculture, scattered single-family residential uses; urban development is concentrated in Rosamond and Mojave. Because the surrounding immediate area is mostly rural and sparsely populated, both temporary and long-term employees generated by the proposed project would be expected to draw from a regional pool and likely commute to the project site from within a 1-hour commute area. Thus, areas of potential social and economic effects for the proposed project, the socioeconomic study area, includes Rosamond, Mojave, the Bakersfield Census County Division (CCD), the Antelope Valley portions of Kern and Los Angeles counties, and Kern County as a whole, for comparative purposes.

Economic and employment data are generally available only for counties or Metropolitan Statistical Areas (MSAs). Where important additional data is available, such as for the Antelope Valley area, it has been incorporated for reference.

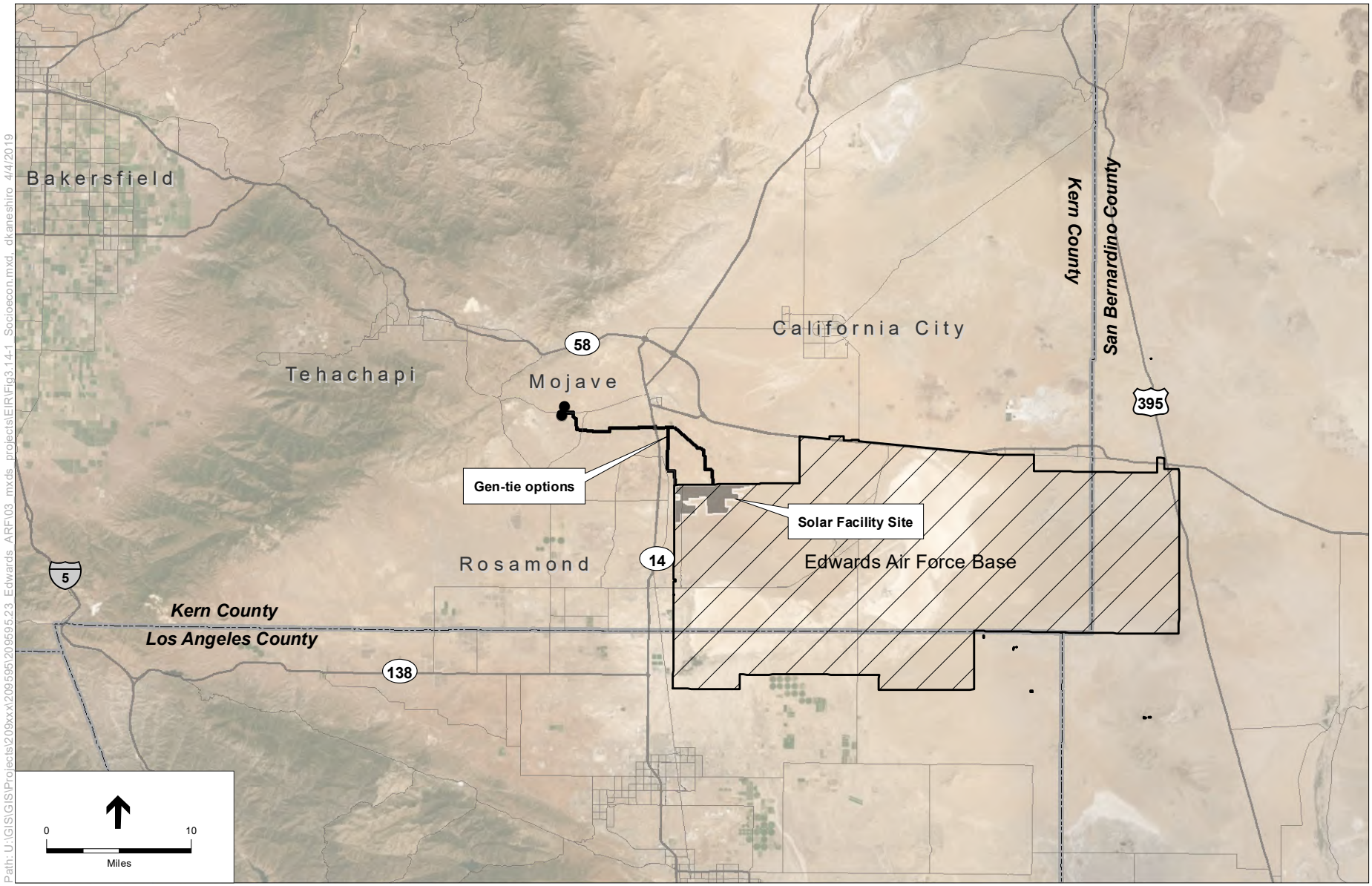


Figure 3.14-1: SOCIOECONOMIC STUDY AREA

Regional and Local Population Trends

At the regional scale, this analysis examines data for Kern County and the Bakersfield CCD. At the local scale, the analysis examines the nearest communities to the project site, including the cities of Tehachapi, California City, and Lancaster, and the unincorporated communities of Mojave and Rosamond (which are also considered Census Designated Places (CDPs)). Population estimates and recent growth trends for the regional and local study areas are summarized in **Table 3.14-1**. Historical data (2000 census data) are also shown. Projections for future growth are also provided (as projected by the California Department of Finance [DOF], the Southern California Association of Governments (SCAG), and the Kern County COG). As shown in Table 3.14-1, population throughout the region grew rapidly between 2000 and 2016 and is projected to continue to grow at a measured pace, with Kern County as a whole exceeding 1 million residents by 2020 and the Bakersfield CCD reaching nearly 1 million by 2040. California City, a small local municipality, experienced the largest growth during the 16-year period, of 59.3 percent. The Mojave CDP experienced no growth during the 16-year period.

TABLE 3.14-1
HISTORICAL AND PROJECTED POPULATION OF THE STUDY AREA

	Census		Projections*		
	2000	**2016**	**2020**	**2030**	**2040**
Kern County	661,645	871,337	929,787	1,067,631	1,213,558
% Change		*31.7%*	*6.7%*	*14.8%*	*13.7%*
Bakersfield CCD	409,800	411,089	640,500	764,900	939,700
% Change		*0.31%*	*20.1%*	*19.4%*	*22.3%*
City of Tehachapi	10,957	13,179	16,000	17,800	20,100
% Change		*20.3%*	*15.3%*	*11.3%*	*12.9%*
City of California City	8,385	13,360	17,300	21,300	26,100
% Change		*59.3%*	*30.5%*	*23.1%*	*22.5%*
City of Lancaster	118,718	159,651	174,800	201,300*	--
% Change		*34.5%*	*10.7%*	*15.2%*	
Mojave CDP	3,836	4,239	--	--	--
% Change		*10.5%*			
Rosamond CDP	14,349	19,672	--	--	--
% Change		*37.1%*			

* SCAG projections only go through 2035.

SOURCE: U.S. Census Bureau, 2016g, Kern County COG, 2009, SCAG, 2012. CA DOF 2017b

Regional and Local Housing Trends

Current (2016) housing conditions for the regional and local study areas are summarized in **Table 3.14-2**. In 2016, Kern County had an estimated 291,292 housing units and a vacancy rate of 9.9 percent. The Bakersfield CCD had an estimated 139,768 housing units and a vacancy rate of 7.4 percent. The communities closer to the project site have an estimated 70,464 housing units among them, with vacancy rates that are all at 9.0 percent or higher. The most recent data available (2010) for vacant units that are for rent or for sale is also shown.

TABLE 3.14-2
HOUSING PROFILE OF THE STUDY AREA

Housing Units	Kern County	Bakersfield CCD	City of Tehachapi	City of California City	City of Lancaster	Mojave CDP	Rosamond CDP
Total Housing	291,292	139,768	3,598	5,254	52,461	1,886	7,265
Occupied Housing	262,337	129,421	3,195	4,298	47,745	1,598	6,297
Percent Owner Occupied	56.9%	50.0%	61.8%	55.9%	54.8%	37.5%	63.7%
Percent Renter Occupied	43.1%	50.0%	38.2%	44.1%	45.2%	62.5%	36.3%
Vacant Housing	28,955	10,347	403	956	4,716	288	968
Vacancy Rate	9.9%	7.4%	11.2%	18.2%	9.0%	15.3%	13.3%
Vacant Units for Sale	5,072	2,165	61	229	1,119	41	200
Vacant Units for Rent	9,743	5,914	180	476	1,952	130	292

SOURCE: U.S. Census Bureau, 2016h.

Employment

Kern County consistently ranks among the top five most-productive agricultural counties in the United States and is one of the nation's leading petroleum-producing counties. Because of its unique geographical positioning, Kern has also become the distribution center for some of the world's largest companies (EDD, 2017a). As of December 2017, Kern County had a total labor force of 317,300 individuals, with 347,400 employed and an unemployment rate of 8.6 percent (EDD, 2018a). Kern County's unemployment rate was higher than the state's current unemployment rate of 4.2 percent for December, 2017. In 2016 (the most recent data available), the American Community Survey estimated the median household income in Kern County at $49,788 (U.S. Census Bureau, 2016).

Employment statistics as of December 2017 by industry sector for Kern County are summarized in Table 3.14-3. As demonstrated in **Table 3.14-3**, government is the largest employer in the County, followed by trade, transportation and utilities and the agricultural industry, goods producing, educational and health services, retail trade, professional and business services, and professional and business services.

TABLE 3.14-3
EMPLOYMENT BY INDUSTRY GROUP IN KERN COUNTY

Industry	Persons Employed
Total Farm	54,200
Government	66,100
Mining and Logging	8,900
Construction	14,300
Manufacturing	13,700
Trade, Transportation & Utilities	54,200
Financial Activities	8,300
Professional & Business Services	25,500
Educational & Health Services	36,500
Retail Trade	35,100
Leisure & Hospitality	25,400
Accommodation & Food Service	22,700
Goods Producing	36,900

SOURCE: EDD, 2017a.

Government Revenues

Table 3.14-4 identifies the financing sources and use of funds adopted for Kern County for the fiscal year 2016-2017. As shown, intergovernmental revenues and other financing services were the largest sources of County funding, while public protection and public assistance were the largest expenditures.

TABLE 3.14-4
KERN COUNTY REVENUES AND EXPENSES FOR FY 2016-2017

Financing Sources	Amount	Percent
Taxes	$376,942,045	18.11%
Licenses, Permits, and Franchises	21,429,865	1.03%
Fines, Forfeitures, and Penalties	22,446,107	1.08%
Revenue from Use of Money and Property	10,575,282	0.51%
Intergovernmental Revenues	792,933,189	38.09%
Charges for Services	184,463,979	8.86%
Miscellaneous Revenues	11,154,421	0.54%
Other Financing Sources	471,543,971	22.65%
Balances Carried Forward from Prior Year	141,156,598	6.78%

TABLE 3.14-4
KERN COUNTY REVENUES AND EXPENSES FOR FY 2016-2017

Financing Sources	Amount	Percent
Cancellation of Prior Year Reserves/Designations	49,324,731	2.37%
Total Financing Sources	*$2,081,970,191*	*100.00%*
Use of Funds		
General Government	$125,638,978	6.03%
Public Protection	782,261,301	37.57%
Public Ways and Facilities	62,351,875	2.99%
Health and Sanitation	353,879,102	17.00%
Public Assistance	632,115,743	30.36%
Education	8,218,983	0.39%
Recreation and Cultural Services	12,834,092	0.62%
Debt Service	14,229,917	0.68%
Appropriation for Contingencies – general purpose	28,467,064	11.37%
Provision for Reserves and Designation	61,973,136	2.98%
Total Spending Requirements	*$2,081,970,191*	*100.00%*

SOURCE: Kern County, 2016.

3.14.3.4 Environmental Justice

This EIS/EIR section provides analysis using a demographic screening evaluation to determine whether a minority and/or low-income population exists within two potentially affected study areas. The project site is within Census Tract (CT) 57, which includes the entire Air Force base. There are no residential uses near the project site within this CT. The primary study area consists primarily of CTs 55.06 and 65, which abut the boundaries of the Air Force base, and two Community Development Plans (CDP), Rosamond and Mojave, located within a 6-mile radius beyond the site boundary. This radius is consistent with the geographic scope of the project's air quality impacts, and is also an appropriate study area for potential hazards and water resources impacts, which are likely to be localized and could be experienced disproportionately by one local community compared to another. The demographic screening to determine the presence of minority and low-income populations is based on information contained in two documents: the Council on Environmental Quality (CEQ) "Environmental Justice: Guidance Under the National Environmental Policy Act" (CEQ, 1997) and the U.S. Environmental Protection Agency (USEPA) "Final Guidance for Incorporating Environmental Justice Concerns in USEPA's NEPA Compliance Analyses" (USEPA, 1998). The screening process relies on 2010 Census data to determine the presence of minority and low-income populations.

The project site is located within CT 57 in Kern County, within Edwards AFB and approximately 6 miles southwest of Mojave and 4.5 miles north of Rosamond, both of which are CDPs (U.S. Census Bureau, 2010c). The project site is in a generally rural and low density area with sparse development. The project site and its immediately adjoining areas to the west and south are within the base and are vacant with no development. There are approximately 30 residences to the north of the project site within CT 65 and scattered residences to the west in CT 55.06. In addition, based on the communities identified as being within the study area in Table 3.14-5, data on minority populations and incidences of poverty are provided for Kern County, Bakersfield, Tehachapi, California City, and Lancaster. Some of these areas provide a degree of overlap (e.g., CT 55.06 and Rosamond CDP; CT 65 and Mojave CDP), the purpose of which is to ensure that appropriate geographic units are examined to avoid artificially diluting or inflating the affected minority populations (CEQ, 1997).

Minority Population

According to the CEQ guidance (1997), minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis (CEQ, 1997), which the purposes of this analysis, would be 20 percent greater than the minority population of the County as a whole.

Table 3.14-5 presents the minority population composition of the planning areas surrounding the project site as described above, based on the 2012-2016 American Community Survey 5-Year Estimates. Total minority population, defined as the total percentage of population from racial or ethnic groups other than non-Hispanic White, ranges from 32.0 percent in CT 57 to 66.6 percent in the city of Lancaster. The proportion of total minority population in Kern County as a whole is 64.0 percent. Hispanic and Latino populations make up the majorities of the total minority populations in these areas, ranging from 12.7 percent in CT 57 to 53.3 percent in Bakersfield CCD. For Kern County as a whole, the Hispanic and Latino population represents 51.6 percent of the total population.

None of the minority populations would be considered meaningfully greater than the general population, because, in all planning areas considered, none of them include a minority population that is 20 percent greater than the minority population of Kern County (U.S. Census Bureau, 2016). Therefore, none of these planning areas are considered to be a community of concern to the environmental justice analysis.

Low-Income Population

Unlike the CEQ (1997) guidance on minority populations, none of the environmental justice guidance documents contain a quantitative definition of what proportion of low-income individuals defines a low-income population. In the absence of guidance, for this analysis, if the proportion of individuals living under the poverty line within a given community is 150 percent or more than that of the general population of the County, that community is considered a low-income population. For the purposes of this analysis, a meaningfully greater low-income population would be a

community with a low-income population of 35.7 percent or greater; or 150 percent or more than Kern County as a whole.

USEPA guidance (1998) recommends use of Census data on poverty income as one indicator and other local data as may be available. This analysis uses the percentage of individuals with income below the Census-defined poverty level. The percentage is compared to that of the general population, and the affected area is included in the analysis if the percentage of low-income population is meaningfully greater than that of the general population, based on the same thresholds as in the case of minority population.

For this analysis, proportions of people living in poverty were obtained from the 2012-2016 American Community Survey (U.S. Census Bureau, 2010e). The U.S. Census Bureau defines poverty using standards set by the U.S. Office of Management and Budget's Statistical Policy Directive 14 (U.S. Office of Management and Budget, 1978; U.S. Census Bureau, 2013).

Family income is compared to thresholds that vary according to family size, age, and number of children under 18 years old. If a family's total income is less than the applicable threshold, then every person in the family is considered to be in poverty. Poverty thresholds are the same for all geographic areas and are adjusted annually by the Consumer Price Index.

In 2016, the poverty threshold for a single person under 65 years of age was $12,486 and for a person 65 years and over was $11,511. For a four-person family with two children under 18 years of age, the poverty threshold was $24,339. Other thresholds are defined for different family sizes and compositions (U.S. Census Bureau, 2016f).

As shown in Table 3.14-5, 26.3 percent of all persons in the Mojave CDP belonged to families with income below the poverty level (U.S. Census Bureau, 2010e). This was the highest proportion among planning areas examined for this analysis. By comparison, 7.9 percent of people in CT 55.06 belonged to families with income below the poverty level, 18.3 percent in CT 65, 22.1 percent in the Bakersfield CCD, 17.3 percent in Tehachapi, 18.3 percent in California City, 12.5 percent in the Rosamond CDP, and 20.5 percent in Lancaster. However, none of the planning areas included in this analysis contain a poverty level that is greater than 150 percent of the proportion of families with income below the poverty level in Kern County as a whole, or 37.5 percent or greater. Therefore, none are considered communities of concern for environmental justice effects related to poverty.

TABLE 3.14-5
RACIAL AND INCOME CHARACTERISTICS FOR RESIDENTS WITHIN THE STUDY AREA

	Kern County	CT 57	CT 55.06	CT 65	Bakersfield CCD	City of Tehachapi	California City	Rosamond CDP	Mojave CDP	City of Lancaster
Total Population	871,337	2,700	5,340	3,677	411,089	13,179	13,360	19,672	4,239	159,651
Hispanic or Latino (All Races)	51.6%	12.7%	23.7%	37.1%	53.3%	33.9%	27.4%	35.2%	44.9%	38.5%
Non-Hispanic White	36.0%	68.0%	59%	45.4%	33.9%	53.2%	42.8%	44.2%	35.2%	33.4%
Non-Hispanic Black or African American	5.2%	10.2%	1.3%	9.8%	6.5%	7.3%	20.7%	10.2%	16.7%	20.8%
Race, alone or in combination with one or more other races:										
White	77.1%	80.9%	91.2%	80.5%	73.6%	84.4%	67.5%	70.4%	56.3%	66.9%
Black or African American	6.5%	16.7%	1.7%	11.9%	8.0%	8.2%	24.2%	12.6%	21.0%	23.4%
American Indian and Alaska Native	2.2%	1.1%	8.3%	6.5%	2.4%	2.4%	4.2%	3.3%	0.8%	1.6%
Asian	5.5%	2.9%	7.6%	3.2%	4.8%	2.6%	5.4%	6.2%	0.5%	5.1%
Native Hawaiian and Other Pacific Islander	0.5%	0.1%	0%	0.2%	0.4%	0.4%	0.8%	0.6%	0.9%	0.6%
Some Other Race	11.9%	5.6%	1.9%	4.3%	14.5%	4.4%	5.5%	14.3%	22.1%	7.5%
Percent Total Minority (Other Than Non-Hispanic White)	64.0%	32.0%	41.0%	54.6%	66.1%	46.8%	57.2%	55.8%	64.8%	66.6%
Percent of People Below Poverty Level	19.2%	8.0%	7.9%	18.3%	22.1%	17.3%	18.3%	12.5%	26.3%	20.5%

NOTES: All population, race, and ethnicity data are from 2012-2016 American Community Survey 5-Year Estimates; data on poverty level from American Community Survey (most recent data, as applicable).

SOURCE: U.S. Census Bureau, 2016a, 2016b,2016c, 2016d, 2016e.

3.14.2 Environmental Consequences

This EIS/EIR section describes the environmental consequences relating to population and housing, socioeconomics and environmental justice issues for the project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.14.2.1 Assessment Methods/Methodology

Socioeconomics

CEQ's Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508; reprinted in CEQ, 2005) provides standards for addressing social and economic effects in preparing an environmental impact statement.

Consistent with these regulations, this analysis of socioeconomic impacts will examine impacts of the project and alternatives with respect to the following issues:

1. Housing availability and the character of local communities that may result from employment of workers for construction, operation, and decommissioning;
2. Employment and the economy of Kern County, California, from spending and employment by the project; and
3. Revenues of Kern County government, which would provide local public services to the project.

The analysis of potential socioeconomic effects of the proposed project takes place in the context of physical effects related to population and housing. An input-output economic model (IMPLAN) was used to estimate the indirect and induced economic impacts from construction operation, maintenance, and decommissioning of the project (ESA, 2014).

CEQA Guidelines §15382 states: "An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant." Thus, for purposes of CEQA, population growth or displacement of people and/or housing is considered in the context of the construction of new or replacement housing, which could result in physical environmental impacts.

Environmental Justice

The USEPA guidance states that an environmental justice analysis should determine if the affected area of minority and/or low-income populations is subject to "disproportionately high and adverse human health or environmental effects" from the implementation of the project. The guidance suggests that a comparative analysis be performed on potential project impacts to the affected population and a reference population to determine the type of high and adverse effects and the extent of disproportionality (USEPA, 1998).

For this analysis, an environmental impact was significant to environmental justice if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

3.14.3 Analysis of Environmental Effects

3.14.3.1 Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Socioeconomics

Construction

Housing. The Proposed Action could result in socioeconomic impacts primarily due to construction employment. However, construction would be temporary and is expected to last up to 2 years.

The construction workforce may consist of as many as 100 to 450 daily workers during project construction; the final count of construction workers that would be required for construction of the solar facility would be determined after the facility layout and capacity is determined. Most construction workers are expected to come from within Kern County with some coming from northern Los Angeles County communities such as the city of Lancaster. The Proposed Action is not expected to result in direct impacts related to the availability of labor within the 1-hour commute distance, but may result in indirect impacts on labor outside of this area by reducing the number of workers available to meet other projects' demands. Such potential impacts are described in more detail in Section 3.14.6, *Cumulative Impacts Analysis*. Because construction would be temporary, it is not expected that workers from outside the project vicinity would permanently relocate to the communities in the project vicinity in order to work at the site; therefore, the proposed project is not expected to contribute to population growth in the local area. Some workers may engage in "weekly commuting," in which they find temporary or transient housing closer to the job site during the workweek. It is expected that such workers would seek temporary housing in the local area, where rental housing as well as hotel or motel rooms would be available.

Further, according to the 2010 Census, there were over 3,000 housing units for rent in the communities within approximately 20 miles of the project site, including Rosamond, Mojave, Tehachapi, Lancaster, and California City (see Table 3.14-2). Additional temporary housing opportunities would also be available through hotel rooms, recreational vehicle (RV) facilities, mobile home sites, and campgrounds in the area. Thus, there would be a sufficient supply of temporary housing options to accommodate workers who may seek temporary housing near the jobsite.

Regional Employment and Economy. Because the project site does not currently support economic uses, project construction would not displace economic activity, but would be a new economic development for the study area. The locations from which construction workers would commute to the site are a key factor determining the extent of potential impacts to the local economy and communities. Income from employment primarily would benefit the communities in which the construction workers and their families reside because this is where most household expenditures occur. Additionally, with an unemployment rate of 8.6 percent in Kern County as of December 2017,

employment of construction workers would have a beneficial effect in temporarily reducing unemployment. Employment and resulting labor income would also have a beneficial effect as a whole. Construction workers' wages and salaries would provide additional income to the area as would expenditures within the local and regional study areas for construction materials and services. An IMPLAN input-output model was used to estimate the economic impacts of the Proposed Action within Kern County based on construction-phase expenditures that would be expected to occur within the regional study area. Starting with expenditures or employment for a given project, also called *direct* impact, an input-output model represents major inter-industry (i.e., business-to-business) transactions in the region of interest, as well as transactions with households, governments, and import/export with economies outside the region. Multipliers derived from the model can be used to estimate *indirect* impacts (business-to-business, or supplier, transactions following expenditures by a project) and *induced* impacts (expenditures by households of workers employed by the project and by the chain of suppliers to the project). The sum of direct, indirect, and induced impacts represents the total economic or employment impact to the region. For purposes of this analysis, Kern County is the region of interest, since almost all workers are expected to come from the County. **Tables 3.14-6** and **3.14-7** summarize the IMPLAN analysis findings.

TABLE 3.14-6
PROPOSED ACTION CONSTRUCTION ECONOMIC BENEFITS[1]

Impact Type	Employment (number of workers)	Labor Income[2]	Total Value Added[3]	Output[4]
Direct Effect	550.0	$33,494,143	$49,444,193	$76,881,907
Indirect Effect	75.2	$4,405,081	$7,121,203	$12,723,456
Induced Effect	153.9	$6,429,679	$12,008,489	$20,139,148
Total Effect	779.1	$44,328,903	$68,573,884	$109,744,512

1. Region is Kern County. Income and output are in 2018 dollars. Values may not add to totals as shown due to rounding. All values are approximate.
2. Labor Income = All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.
3. Value Added = The difference between an industry's or an establishment's total output and the cost of its intermediate inputs. It equals gross output (sales or receipts and other operating income, plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). Value added consists of compensation of employees, taxes on production and imports less subsidies (formerly indirect business taxes and nontax payments), and gross operating surplus (formerly "other value added"). Gross value added is the value of output less the value of intermediate consumption; it is a measure of the contribution to Gross Domestic Product (GDP) made by an individual producer, industry or sector; gross value added is the source from which the primary incomes of the System of National Accounts are generated and is therefore carried forward into the primary distribution of income account.
4. Output = Output represents the value of industry production. In IMPLAN, these are annual production estimates for the year of the data set and are in producer prices. For manufacturers, this would be sales plus/minus change in inventory. For service sectors, production = sales. For retail and wholesale trade, output = gross margin and not gross sales.

SOURCE: ESA, 2018.

TABLE 3.14-7
STATE AND LOCAL TAX IMPACTS FROM CONSTRUCTION OF PROPOSED ACTION

Source	Total Amount
Employee Compensation	$199,040.00
Tax on Production and Imports	$2,229,720.00
Households	$1,672,010.00
Corporations	$289,957.00
Total	*$4,390,727.00*

SOURCE: ESA, 2018.

As shown in Tables 3.14-6 and 3.14-7, the total employment impact of project construction is estimated at 779 jobs, and the total 2-year construction period economic output is estimated at $109 million. State and local tax impacts from construction of the Proposed Action are estimated at $4.3 million. Therefore, the Proposed Action would not have an adverse effect on employment or the economy in the region.

Revenues of Kern County Government. As shown in Table 3.14-4, intergovernmental revenues and taxes were the largest sources of County funding, while public protection and public assistance were the largest expenditures. Local law enforcement, emergency services and other public services would be provided to the project by Kern County agencies. As described in Mitigation Measure MM 3.13-1a, the developer shall pay for impacts to countywide public protection, sheriff patrol and investigation, and fire services. In addition, the developer would work with County staff to determine how the receipt of sales and use taxes related to the construction of the project would be maximized. Section 3.13, *Public Services*, for more information. With implementation of Mitigation Measure MM 3.13-1a, the Proposed Action would not have an adverse effect on revenues of Kern County Government, affecting local public services.

Operation and Maintenance

Housing. The total amount of staff required for operation and maintenance of the solar facility would be determined after the facility design is finalized. However, it is expected to be staffed by up to 10 full-time employees for operation, maintenance, and security of the solar facility. Additional maintenance and security personnel would be dispatched to the solar facility, as needed. In contrast to construction employment, it is expected that these workers would be hired locally or, if hired from outside the Edwards AFB area, would relocate permanently to the area. Because of the number of vacant homes in the surrounding area (approximately 1,600 units for sale and approximately 3,000 units for rent), there would be minimal impact to the local housing supply or the community, even if all permanent workers were to relocate to the adjacent communities of Mojave, Rosamond, or California City. Therefore, the local housing supply would be sufficient to accommodate operation and maintenance of the Proposed Action and no adverse effects to housing would occur.

Regional Employment and Economy. The employment of up to 10 workers for the long-term operation and maintenance of the new facility would not adversely affect the regional labor market, but would instead have a beneficial effect.

For input-output analysis, it is estimated that 10 full-time professionals, including production technicians and high-voltage technicians, would be hired on a permanent basis. **Tables 3.14-8** and **3.14-9** show that, based on this assumption, total employment impacts in the County, including direct, indirect, and induced impacts, would be 29 employees, with a total economic output impact of approximately $10.4 million. Operation of the Proposed Action would result in a state and local tax impact of approximately $388,426.

TABLE 3.14-8
PROPOSED ACTION OPERATION ECONOMIC BENEFITS[1]

Impact Type	Employment (number of workers)	Labor Incomes[2]	Total Value Added[3]	Output[4]
Direct Effect	10	$2,437,850	$6,114,242	$7,786,473
Indirect Effect	7	$384,030	$602,951	$1,164,838
Induced Effect	11	$476,582	$890,760	$1,493,614
Total Effect	29	$3,298,462	$7,607,953	$10,444,925

1. Region is Kern County. Income and output are in 2018 dollars. Values may not add to totals as shown due to rounding. All values are approximate.
2. Labor Income = All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.
3. Value Added = The difference between an industry's or an establishment's total output and the cost of its intermediate inputs. It equals gross output (sales or receipts and other operating income, plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). Value added consists of compensation of employees, taxes on production and imports less subsidies (formerly indirect business taxes and nontax payments), and gross operating surplus (formerly "other value added"). Gross value added is the value of output less the value of intermediate consumption; it is a measure of the contribution to GDP made by an individual producer, industry or sector; gross value added is the source from which the primary incomes of the System of National Accounts are generated and is therefore carried forward into the primary distribution of income account.
4. Output = Output represents the value of industry production. In IMPLAN these are annual production estimates for the year of the data set and are in producer prices. For manufacturers this would be sales plus/minus change in inventory. For service sectors production = sales. For retail and wholesale trade, output = gross margin and not gross sales.

SOURCE: ESA, 2018.

TABLE 3.14-9
STATE AND LOCAL TAX IMPACTS FROM OPERATION OF PROPOSED ACTION

Source	Amount
Employee Compensation	$13,160.00
Tax on Production and Imports	$195,476.00
Households	$125,229.00
Corporations	$54,561.00
Total State and Local Tax Impact	$388,426.00

SOURCE: ESA, 2018.

Revenues of Kern County Government. Effects of Kern County government revenues affecting public service would be the same as those described for construction above. With implementation of Mitigation Measure MM 3.13-1a (see Section 3.13, *Public Services*) the Proposed Action would not have an adverse effect on revenues of Kern County Government, affecting local public services.

In addition, the Proposed Action would not indirectly induce substantial population growth by introducing new source of electricity because, although it would produce additional electricity and increase service capacity, it is intended to meet the demand for energy that is already projected based on growth projections for electricity in Southern California Edison's (SCE's) service area.

Decommissioning

At the expiration of the 35-year enhanced-use lease (EUL) with the Air Force, the owner would either extend the EUL or decommission the facility at the project site. Decommissioning would involve dismantling of the solar modules and footings and removal by truck, and the site would be converted to other uses in accordance with applicable land use regulations at the time.

The workforce and length of time for decommissioning is expected to be similar to or reduced compared to that of the construction period. It is difficult to forecast housing and employment conditions 35 or more years into the future; however, based on growth projections shown in Table 3.14-1, it is expected that the available labor pool would be greater than current conditions. Similar to construction of the Proposed Action, the temporary decommissioning workforce would likely come from Kern County or the nearby Los Angeles County community of Lancaster. Many workers would likely commute to the project site. For workers who choose to commute weekly or temporarily relocate to the local area during the workweek, it is expected that sufficient numbers of rental properties and hotel and motel accommodations would be available in the area, and that the needs of the temporary decommissioning workforce would not have an adverse effect on housing. No substantial sales or property tax revenues would be generated during or after decommissioning.

In summary, decommissioning of the Proposed Action would not adversely affect housing availability, employment, or revenues of Kern County government.

CEQA: Impact Significance Determination

CEQA Guidelines §15382 states: "An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant."

The project would be significant with regard to population and housing if it would:

- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The County determined in the IS/NOP (see Appendix A1) that the proposed project would result in no impacts related to population and housing under CEQA. Therefore, this issue does not require further discussion in this EIS/EIR.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No impact.

Environmental Justice

The environmental justice analysis determined that none of the communities within the study area are considered to be communities of concern based on the definition of meaningfully greater minority or low-income populations defined in Table 3.14-5 above. Therefore, the Proposed Action would not result in human health and environmental adverse effects that would result in disproportionately high and adverse impacts on local and regional communities of concern including minority or low-income populations.

CEQA: Impact Significance Determination

CEQA does not require the analysis of environmental justice impacts and does not provide specific significance criteria for environmental justice impacts. Consequently, no CEQA significance determinations have been made for the analysis of environmental justice impacts.

3.14.3.2 Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Socioeconomics

Construction

Construction of Alternative B would use the same equipment and materials as Alternative A; however, it is anticipated that the reduction in total project size would result in fewer workers or a reduction in the duration of construction.

Alternative B would result in similar impacts related to housing demand generated by a temporary increase in workers coming from outside the local project area. As discussed for Alternative A, there is adequate housing supply available for temporary relocation of the construction labor force into the project area.

It is assumed that construction employment for Alternative B would require slightly fewer workers than Alternative A, but it is expected that construction employment would result in similar beneficial effects related to employment in a region that would occur under Alternative A. Any changes in revenue associated with Alternative B would be similar to those described above for Alternative A, although with a potentially smaller workforce and smaller project area, an

incremental decrease in construction revenue and expenditures may occur. Therefore, any benefits could be marginally reduced.

Operation and Maintenance

Because Alternative B would result in a smaller PV facility than Alternative A, it is assumed that fewer full-time workers would be required for operation and maintenance of Alternative B. Therefore, the existing housing market is anticipated to be able to accommodate any permanent relocation required for these positions, and the employment and economic benefits related to operation and maintenance of the project would be marginally reduced compared to Alternative A.

Decommissioning

The long-term employment and economic effects related to decommissioning activities would be speculative because future conditions are unknown. However, it is anticipated that decommissioning of Alternative B would have similar housing and regional employment and economic effects as decommissioning of Alternative A; although, the beneficial effects would be marginally reduced due to the smaller PV facility proposed under Alternative B.

CEQA: Impact Significance Determination

CEQA Guidelines Section 15382 states: "An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant."

As discussed in the IS/NOP that was prepared for the proposed project (see Appendix A1), the proposed project would have no impacts related to population and housing. As a smaller project, Alternative B would result in similar no impact determinations related to population and housing under CEQA. Therefore, this issue does not require further discussion in this EIS/EIR.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No Impact.

Environmental Justice

As with Alternative A, because there are no communities with meaningfully greater minority or low-income populations within the study area for the environmental justice analysis, construction, operation, and decommissioning of Alternative B would not have the potential to result in disproportionately high adverse impacts on communities of concern. Environmental justice impacts related to implementation of Alternative B would be similar to those that would occur under Alternative A and would not have an adverse effect on any low-income or minority population.

CEQA: Impact Significance Determination

As described above under Alternative A, CEQA does not does not require the analysis of environmental justice impacts; therefore, no CEQA significance determinations have been made for the analysis of environmental justice impacts.

3.14.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Socioeconomics

Construction

Under Alternative C, the proposed project facility would not be constructed and the site would remain undeveloped. Under this alternative, no construction employment would be generated and no temporary increase in housing demand would occur, nor would the local and regional area experience the employment and economic benefits that would occur under either Alternative A or Alternative B.

Operation and Maintenance

Under Alternative C, the proposed project facility would not be constructed and the site would remain undeveloped. Under this alternative, no operations-related employment would be generated and the local and regional area would not experience the employment and economic benefits that would occur under either Alternative A or Alternative B.

Decommissioning

Under Alternative C, the proposed project facility would not be constructed and the site would remain undeveloped. Under this alternative, decommissioning would not be required upon expiration of the EUL and the local and regional area would not experience the employment and economic benefits that would occur related to decommissioning activities under Alternative A or Alternative B.

CEQA: Impact Significance Determination

CEQA Guidelines Section 15382 states: "An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant."

As discussed above, Alternative C would not result in a physical change to the environment; therefore, no impacts would occur.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No Impact.

Environmental Justice

The No Action/No Project Alternative would not result in any of the impacts described and, therefore, would not have any disproportionately high and adverse impacts to populations in the affected area. No impacts related to environmental justice would occur.

CEQA: Impact Significance Determination

As described above under Alternative A, CEQA does not does not require the analysis of environmental justice impacts; therefore, no CEQA significance determinations have been made for the analysis of environmental justice impacts.

3.14.4 Cumulative Impact Analysis

3.14.4.1 NEPA: Cumulative Environmental Effects and Their Significance

Socioeconomics

The potential for cumulative socioeconomic impacts exists where the labor demand exceeds the labor supply, the imbalance results in an influx of workers to fill positions, and the influx results in the housing demand exceeding the housing supply, which could lead to increased housing prices, more crowded living situations, and/or poorer living conditions. For example, projects with overlapping construction schedules and/or operations could collectively result in a demand for labor that cannot be met by the region's existing labor pool, which could lead to an influx of nonlocal workers and possibly their dependents. This population increase could impact social and economic resources if there are insufficient housing resources and/or infrastructure and public services to accommodate the new residents' needs. Accordingly, the analysis below considers whether the cumulative increase in the demand for labor would result in an adverse cumulative jobs–housing imbalance in the region.

Table 3-1 identifies current and reasonably foreseeable solar and non-solar projects that have been or could be developed within Kern and Los Angeles counties. While a large number of projects may be planned, and so considered to be possible for future development, not all of them are expected to actually be built due to construction funding constraints, schedule, delays, or other factors. Given the uncertain and challenging economic circumstances facing federal and state economies as well as private developers, it is far from assured that future funding and other necessary support will be sufficiently available for all of the proposed projects to be realized within the projected schedules.

As shown in Table 3-1, there are approximately 44 approved or reasonably foreseeable renewable energy projects in Kern County. In addition, other non-renewable energy projects could require workers with similar skills to those that would be employed for construction of the proposed project, including specific plans, landfills, transmission projects and other residential and commercial developments. The proposed project could contribute to cumulative socioeconomic conditions in populated areas within a 1-hour commute distance of the approved and reasonably foreseeable projects that could employ workers from any of the same communities as the project. The approved or reasonably foreseeable renewable energy projects that may be under construction during construction of the proposed project, with similar construction worker demands include the Antelope Valley Solar Project, Beacon Solar, Fremont Valley Preservation Water Bank and Solar Project, RE Rosamond One and Two, Willow Springs Solar Array, Alta East, Addison Energy Wind Project, Avalon Wind Energy Project, and the Catalina Renewable Energy Project (see **Table 3.14-10**). Several renewable energy projects are or are expected to be operational prior to start of

the proposed project, but would contribute to the labor demand during the operation and maintenance stage of the proposed project. The cumulative analysis assumes that the renewable energy projects listed above (and described in Table 3.14-10) would be under construction within the 24-month construction period for the proposed project.

The contributions of Alternatives B and C to the cumulative impacts described below would be reduced compared to Alternative A in proportion to the reduced workforces.

Construction

Table 3.14-10 shows the currently available data about project construction workforces for the projects in the cumulative scenario.

TABLE 3.14-10
CONSTRUCTION AND OPERATIONAL EMPLOYMENT FOR CUMULATIVE SCENARIO RENEWABLE ENERGY PROJECTS

Project	Megawatts	Construction Workers	Operational Workers
Antelope Valley Solar Project by Renewable Resources Group	650	650	18
Beacon Solar by Nextera	250	700	10
Fremont Valley Preservation Water Bank and Solar Project	1008 (Water Bank)	843	31
RE Rosamond One and Two	40	480	14
Willow Springs Solar Array by First Solar	160	240	5
Addison Energy Wind Project		250	10
Alta East by Alta	318 MW wind facility with up to 106 wind turbines	262	15
Avalon Wind Energy Project	300	100	13
Catalina Renewable Energy Project	200 MW wind from 134 wind turbines and 150 MW solar from 2,241,000 panels	250	12
Total		**3,775**	**128**

SOURCE: Kern County, 2010a, 2010b, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2013c, 2013d, 2014.

Because the precise construction schedules for each project are currently unknown, this analysis assumes that the construction periods of the renewable energy projects in the cumulative scenario would be of similar length to the proposed project (approximately 24 months). Project developers would likely seek to minimize the construction occurring during the hottest summer months and may therefore stagger their construction periods accordingly. Consequently, some seasonality may be expected to occur as developers favor more construction during the region's cooler winter months. It is assumed that the construction needs for each of the solar projects would be approximately evenly spread throughout the 24-month period for cumulative construction-related impacts. Under the extremely improbable circumstance that construction of all planned renewable

energy projects listed in Table 3.14-10 happened concurrently, they would require a maximum of approximately 3,775 construction workers at one time.

Because it is likely that not all of the cumulative projects would be under construction for the entire 24-month construction period, the actual cumulative construction workforce would be lower. However, it is reasonable to assume that other future projects that are not yet known for this cumulative scenario may begin construction later in this time period.

Regional Labor Force Supply

As Table 3.14-3 illustrates, the total work force of skilled construction workers currently living in Kern County is estimated to be approximately 14,300. This does not take into consideration the number of skilled construction workers living in northeastern Los Angeles County in the communities of Lancaster and Palmdale. Future demand for 3,775 construction workers would not exceed the capacity of the current skilled labor force. In addition, the current unemployment rate in Kern County is estimated to be 8.6 percent. Applying this rate to the skilled construction workers in Kern County yields an estimate of approximately 1,300 unemployed construction workers. The cumulative construction worker demand would represent a greater number than the locally available labor. Although many of the region's other unemployed residents (not construction workers) may not be willing or able to acquire the necessary skills required to serve the cumulative labor demand, many residents could be trained to work on these projects. Further, some of the construction work would be less specialized and entry-level positions, which may be suitable for less skilled workers.

Some of the regional workforce currently employed in other sectors could also have the capabilities to qualify for project construction work. In such cases, some job transferring may occur, particularly because the construction jobs may be relatively well-paid and attractive for many local residents. The less skilled or desirable jobs vacated by individuals transferring to construction work could be filled by other less skilled unemployed residents.

Housing and Lodging Impacts

Notwithstanding the potential for employed and unemployed non-construction workers to qualify for the construction jobs of the cumulative scenario, there could be a demand for construction workers that would exceed the available labor supply within the geographic scope. It is assumed that those jobs would be filled by workers relocating to the region from elsewhere.

Given the numerous variables discussed above, it is difficult to project the extent of future weekly commuting or other in-migration that would be necessary to meet the future cumulative labor needs within the region. However, considering that workers may commute from up to 1 hour away, it is assumed that approximately 2,100 construction workers could require temporary housing in the local area or within Kern or Los Angeles counties.

Based on State Employment Development Department (EDD) data (EDD, 2018b and 2018c), the skilled construction labor force within Los Angeles County is 138,300 persons and within San Bernardino County (to the east of the project site) is 108,900 persons. This suggests that there is likely to be a considerable additional potential labor force available to commute weekly or to

relocate temporarily to Kern County, most likely to communities near the proposed project and other project sites. Consequently, from a broader geographic and labor force perspective, no significant shortages of adequately skilled construction workers are foreseen, provided that adequate suitable housing is available for relocating near the work sites.

The cumulative influx in construction labor to the County could create demand for temporary housing that is greater than the existing supply of temporary lodging. As shown in Table 3.14-2, there were approximately 9,740 vacant rental units available in the local area. Additionally, hotel and motel rooms may also be available. Assuming that about half of the construction workers might be willing to share accommodations to save on their lodging costs, the existing local rental units, hotels, and motels would be able to house all of the remaining construction workers seeking temporary housing. If these workers were willing to commute up to one hour to the site daily, the supply of vacant rental units and hotel and motel rooms would substantially increase, and would be sufficient to temporarily house the approximately 3,775 construction workers that could move into the area as a result of the cumulative projects; however, any substantial unforeseen increase in worker demand or decrease in availability of lodging could exceed the capacity of the communities within the geographic scope to adequately house these workers.

In summary, there is a potential for short-term adverse cumulative social and economic impacts (related to housing availability) in Kern County associated with the demand for skilled construction labor under the cumulative scenario. Because analysis suggests future construction labor demand could exceed the existing local work force within Kern County a potential shortage of commuter-related temporary housing could result. However, this outcome is unlikely because of funding, permitting, and construction schedule set-backs that often occur. No adverse social or economic impacts are anticipated related to housing demand.

Operation and Maintenance

As shown in Table 3.14-3, there are 54,200 workers in the “Trade, Transportation and Utilities” industry group in Kern County. In the absence of more precise data on available skills, this industry group is used as the available labor pool for this analysis. Although not all workers in this category may possess the skills required for solar power plant operation and maintenance, there would be opportunities for the transferability of other skills, on-the-job and local community college training, and lower skilled qualification requirements for some of the available jobs. Based on current unemployment rates of 8.6 percent, it is assumed that approximately 3,775 of these workers would be available to meet operational labor needs. Therefore, it is not expected that any in-migration of operational workers would be needed to meet the cumulative scenario’s operational labor need, and there would be no cumulative impact during operation and maintenance on housing and lodging.

Decommissioning

Evaluating the proposed project’s cumulative impacts when future facility decommissioning occurs is highly speculative. Decommissioning is expected to occur after approximately 35 years of operation. It is not possible to project with confidence the likely future social and economic conditions of the local and regional study area. Similarly, the extent to which the projects in the cumulative scenario would undergo decommissioning concurrently is unknown.

Nonetheless, decommissioning is expected to require a workforce similar to the construction phase, and the project is expected to be one of many similar solar projects within Kern County. As such, its contribution to cumulative social and economic effects would be proportional to its size relative to the other development projects in the region and the collective size of projects undergoing decommissioning or construction at that time. Although the cumulative effects of construction would temporarily increase demand for housing, decommissioning would not likely overlap with as many projects as construction, and in over 35 years' time, based on regional population growth trends, it is likely that there would be more local workers and more temporary housing options available to accommodate decommissioning needs.

CEQA: Cumulative Impact Significance Determination

The proposed project would not cause any impacts related to population and housing under CEQA; therefore, the project would not cause or contribute to any cumulative impacts in this regard.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No Impact.

3.14.4.2 NEPA: Environmental Impacts

Environmental Justice

As described above under Alternatives A through C, the Proposed Action would not result in an adverse effect on any low-income or minority population. Cumulative effects such as those related to regional air quality have the potential to affect environmental justice communities within a region larger than that described for the Proposed Action. As discussed in Section 3.2, *Air Quality*, construction emissions from the simultaneous construction of multiple cumulative projects within a 6-mile radius, in conjunction with the Proposed Action, could result in the exceedance of the Eastern Kern Air Pollution Control District's thresholds for criteria pollutants. However, as demonstrated in Table 3.14-5, no communities of concern exist within this 6-mile radius. Thus, the proposed project is not anticipated to result in a disproportionately high or adverse effect on communities of concern under the cumulative scenario. Further, the Proposed Action and the cumulative solar projects referenced in Table 3-1 would offset emissions of criteria pollutants that would otherwise occur from energy consumption from the grid.

CEQA: Impact Significance Determination

CEQA does not does not require the analysis of environmental justice impacts and does not provide specific significance criteria for environmental justice impacts. Consequently, no CEQA significance determinations have been made for the analysis of cumulative environmental justice impacts.

3.14.5 Mitigation Measures

No mitigation measures are recommended to address socioeconomic impacts related to the Alternative A, Alternative B, or Alternative C.

3.14.6 Residual Impacts after Mitigation

Because neither the Alternative A nor Alternative B requires mitigation measures related to population and housing, socioeconomic, and environmental justice impacts, residual effects of the Proposed Action would be the same as the effects described in section 3.14.3 and 3.14.4.

3.15 Traffic and Transportation

3.15.1 Affected Environment

This EIS/EIR section describes the affected environment and regulatory setting relating to transportation, identifies possible impacts that would result from implementation of the project, and identifies mitigation measures that would reduce these impacts, where applicable. In December 2013, RBF Consulting prepared a traffic study for the Oro Verde Solar Project, which is provided in Appendix B14 (RBF, 2013). Due to the similarity of the proposed project to the previously proposed Oro Verde Solar Project, which was proposed in the same location as the proposed project, (see Section 1.2 of this EIS/EIR for more details about how the Oro Verde Solar Project relates to the Edwards AFB Solar Project), the RBF study is used as a resource for this analysis, but further analysis was conducted by the County and its environmental consultant's registered professional traffic engineer to account for changes to the proposed project (e.g., the number of construction workers). Additionally, in March 2018, Dudek prepared a traffic impact analysis (TIA) for the Gen-Tie Routes for the Edwards AFB Solar Project, which is provided in Appendix B15 (Dudek, 2018). The Dudek TIA looked at a larger study area than did the RBF study, reflecting the gen-tie route options under consideration, but the TIA provided a focused impact analysis for the intersections in the RBF study during the nine-month construction period when construction of the solar facility and gen-tie would overlap. The Dudek TIA is used as a resource for this analysis, to provide a comprehensive analysis of potential environmental impacts to transportation conditions.

Scoping Issues Addressed

The following is a list of comments related to transportation, which were provided by Caltrans. These issues and concerns are addressed in this section.

- All necessary encroachment permits and transportation permits should be obtained (specifically overhead transmission line at State Route (SR) 14).

Regulatory Framework

State

Caltrans has jurisdiction over state highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on state highways. Kern County is under the jurisdiction of Caltrans District 9. The following Caltrans regulations apply to potential transportation and traffic impacts of the proposed project.

California Vehicle Code (CVC), Division 15, Chapters 1 through 5 (Size, Weight, and Load). Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.

California Street and Highway Code, Sections 660-711, 670-695. Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery, includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits, and requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.

Local

Kern County General Plan

The Kern County General Plan Circulation Element establishes goals, policies and implementation measures regarding the development of roads in the County and the maintenance of a minimum Level of Service (LOS) of LOS D.[1] The Plan also includes provisions for monitoring development applications as they relate to traffic estimates and the existing road network. Project development shall comply with the requirements of the Kern County Zoning Ordinance, Land Division Ordinance, and Development Standards. The policies, goals, and implementation measures in the Kern County General Plan that pertain to traffic and transportation and are applicable to the proposed project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development, such as the Proposed Action. These measures are not listed below, but as stated in Chapter 1, *Introduction*, all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 2: Circulation Element

2.1 Introduction

Goals

Goal 4: Kern County will plan for a reduction of environmental effects without accepting a lower quality of life in the process.

Goal 5: Maintain a minimum [level of service] LOS D for all roads throughout the County.

2.3 Highways

2.3.3 Highway Plan

Goal

Goal 5: Maintain a minimum LOS D.

Policies

Policy 1: Development of roads within the County shall be in accordance with the Circulation Diagram Map. The charted roads are usually on section and midsection lines. This is because the road centerline can be determined by an existing survey.

Policy 2: This plan requires, as a minimum, construction of local road widths in areas where the traffic model estimates little growth through and beyond 2010. Where the Kern County Planning and Natural Resources Department's growth estimates indicate more than a local road is required, expanded facilities shall be provided. The timing and scope of required facilities should be set up and implemented through the Kern County Land Division Ordinance. However, the County shall routinely protect all surveyed section lines in the Valley and Desert regions for arterial right-of-way. The County shall routinely protect all midsection lines for collector highways in the same regions. The only possible exceptions shall be where the County adopts special studies and where Map Code 4.1 (Accepted County Plan) areas occur. In the Mountain Region where terrain does not allow construction on surveyed

[1] Level of service (LOS) is a qualitative measure of the degree of congestion and delay at intersections, using a six-grade system from LOS A (no delay) to LOS F (very long delays).

section and midsection lines, right-of-way width shall be the size shown on the diagram map. No surveyed section and midsection "grid" will comprehensively apply to the Mountain Region.

Policy 3: This plan's road-width standards are listed below. These standards do not include State highway widths that would require additional right-of-way for rail transit, bike lanes, and other modes of transportation. Kern County shall consider these modifications on a case by- case basis.

- Expressway [Four Travel Lanes] Minimum 110-foot right-of-way;
- Arterial [Major Highway] Minimum 110-foot right-of-way;
- Collector [Secondary Highway] Minimum 90-foot right-of-way;
- Commercial-Industrial Street Minimum 60-foot right-of-way; and
- Local Street [Select Local Road] Minimum 60-foot right-of-way.

Implementation Measure

Measure A: The Kern County Planning and Natural Resources Department shall carry out the road network policies by using the Kern County Land Division Ordinance and Zoning Ordinance, which implements the Kern County Development Standards that include road standards related to urban and rural planning requirements. These ordinances also regulate access points. The Kern County Planning and Natural Resources Department can help developers and property owners in identifying where planned circulation is to occur.

2.3.4 Future Growth

Goal

Goal 1: To provide ample flexibility in this plan to allow for growth beyond the 20-year planning horizon.

Policies

Policy 2: The County should monitor development applications as they relate to traffic estimates developed for this plan. Mitigation is required if development causes affected roadways to fall below LOS D. Utilization of the California Environmental Quality Act (CEQA) process would help identify alternatives to or mitigation for such developments. Mitigation could involve amending the Land Use, Open Space, and Conservation Element to establish jobs/housing balance if projected trips in any traffic zone exceed trips identified for this Circulation Element. Mitigation could involve exactions to build offsite transportation facilities. These enhancements would reduce traffic congestion to an acceptable level.

Policy 4: As a condition of private development approval, developers shall build roads needed to access the existing road network. Developers shall build these roads to County standards unless improvements along state routes are necessary then roads shall be built to California Department of Transportation (Caltrans) standards. Developers shall locate these roads (width to be determined by the Circulation Plan) along centerlines shown on the circulation diagram map unless otherwise authorized by an approved Specific Plan Line. Developers may build local roads along lines other than those on the circulation diagram map. Developers would negotiate necessary easements to allow this.

Policy 5: When there is a legal lot of record, improvement of access to county, city or State roads will require funding by sources other than the County. Funding could be by starting a local benefit assessment district or, depending on the size of a project, direct development impact fees.

Policy 6: The County may accept a developer's road into the County's maintained road system. This is at Kern County's discretion. Acceptance would occur after the developer follows the above requirements. Roads are included in the County road maintenance system through approval by the Board of Supervisors.

Implementation Measures

Measure A: The County should relate traffic levels to road capacity and development levels. To accomplish this, the Kern County Roads Department and the Kern County Planning and Natural Resources Department should set up a monitoring program. The program would identify traffic volume to capacity ratios and resulting level of service. The geographic base of the program would be traffic zones set up by Kern Council of Governments.

Measure C: Project development shall comply with the requirements of the Kern County Zoning Ordinance, Land Division Ordinance, and Development Standards.

2.5.1 Trucks and Highways

The Kern County road network handles a high ratio of heavy truck traffic. State highways carry most of this traffic. Most of the trucks are interstate carriers. As such, interstate trucking is not under the direct control of County officials. In as much as this traffic affects County residents and taxpayers, they need actions to guarantee State highways in Kern County receive a fair share of California's transportation investment.

Goals

Goal 1: Provide for Kern County's heavy truck transportation in the safest way possible.

Goal 2: Reduce potential overweight trucks.

Goal 3: Use State Highway System improvements to prevent truck traffic in neighborhoods.

Policies

Policy 1: California Department of Transportation (Caltrans) should be made aware of the heavy truck activity on Kern County's roads.

Policy 2: Start a program that monitors truck traffic operations.

Policy 3: Promote a monitoring program of truck lane pavement condition.

2.3.10 Congestion Management Programs

State law requires that urbanized counties prepare an annual congestion management program (CMP). City and county eligibility for new gas tax subventions is contingent upon their participation in the congestion management program. To qualify for funding provided through the State Transportation Improvement Program (STIP) or the Federal Transportation Improvement Program (FTIP), the regional transportation agency must keep current a Regional Transportation Program (RTP) that contains the CMP. Also, the CMP offers local jurisdictions the opportunity to

find cooperative solutions to the multi-jurisdictional problems of air pollution and traffic congestion.

The CMP has links with air quality requirements. The California Clean Air Act requires that cities and countieqs implement transportation control measures (TCMs) to attain, and maintain, the State air quality standard.

Goals

a) To satisfy the trip reduction and travel demand requirements of the Kern Council of Government's Congestion Management Program.

b) To coordinate congestion management and air quality requirements and avoid multiple and conflicting requirements.

Policies

1. Pursuant to California Government Code 65089(a), Kern County has designated Kern Council of Governments as the County's Congestion Management Agency (CMA).

2. The Congestion Management Agency is responsible for developing, adopting, and annually updating a Congestion Management Plan. The Plan is to be developed in consultation with, and with the cooperation of, the regional transportation agency (also Kern Council of Governments), regional transportation providers, local governments, Caltrans, and the air pollution control district.

Implementation Measures

a) Kern County Council of Governments should request the proper consultation from County of Kern to develop and update the proper congestion management program.

b) The elements within the Kern Congestion Management Program are to be implemented by each incorporated city and the County of Kern. Specifically, the land use analysis program, including the preparation and adoption of deficiency plans is required. Additionally, the adoption of trip reduction and travel demand strategies are required in the Congestion Management Program.

The West Edwards Road Settlement Specific Plan identifies assumptions, goals, policies and implementation measures that relate to the local collector roads and new development road improvement standards that apply to the specific plan area.

The Mojave Specific Plan establishes objectives, policies and implementation measures for providing adequate transportation facilities to serve residents, commercial and industrial businesses in the specific plan area.

There are no goals, policies, or implementation measures within South of Mojave-Elephant Butte Specific Plan that apply to Transportation.

The Willow Springs Specific Plan presents goals, policies, and implementation measures that are not specific to the project but relate to transportation in general, including maintaining adequate

traffic safety, reducing time spent in travel within the plan area, and widening impacted roadways to handle increased traffic generated by new development.

There are no goals, policies, or implementation measures within the Actis Interim Rural Community Plan that apply to Transportation.

2014 Regional Transportation Plan

The latest Regional Transportation Plan (RTP) was prepared by the Kern Council of Governments (COG) and was adopted on June 19, 2014. The 2014 RTP is a 26-year blueprint that establishes a set of regional transportation goals, policies, and actions intended to guide development of the planned multimodal transportation systems in Kern County. It was developed through a continuing, comprehensive, and cooperative planning process, and provides for effective coordination between local, regional, state, and federal agencies. New to the 2014 RTP, California's Sustainable Communities and Climate Protection Act, or Senate Bill (SB) 375, calls for the Kern RTP to include a Sustainable Communities Strategy (SCS) that reduces greenhouse gas (GHG) emissions from passenger vehicles and light-duty trucks by 5 percent per capita by 2020 and 10 percent per capita by 2035 as compared to 2005. In addition, SB 375 provides for closer integration of the RTP/SCS with the Regional Housing Needs Allocation (RHNA), ensuring consistency between low-income housing need and transportation planning. The 2014 RTP exceeds SB 375 reduction targets for the region and is consistent with the RHNA. Kern COG has placed a greater emphasis on sustainability and integrated planning in the 2014 RTP/SCS.

The intent of the SCS is to achieve the state's emissions reduction targets for automobiles and light trucks. The SCS will also provide opportunities for a stronger economy, healthier environment, and safer quality of life for community members in Kern County. The RTP/SCS seeks to improve economic vitality, improve air quality; improve the health of communities, improve transportation and public safety, promote the conservation of natural resources and undeveloped land, increase access to community services, increase regional and local energy independence, and increase opportunities to help shape the community's future.

The 2014 RTP/SCS financial plan identifies how much money is available to support the region's transportation investments. The plan includes a core revenue forecast of existing local, state, and federal sources, along with funding sources that are considered to be reasonably available over the time horizon of the RTP/SCS. These new sources include adjustments to state and federal gas tax rates based on historical trends and recommendations from two national commissions (National Surface Transportation Policy and Revenue Study Commission and National Surface Transportation Infrastructure Financing Commission), leveraging of local sales tax measures, local transportation impact fees, potential national freight program/freight fees, future state bonding programs, and mileage-based user fees (Kern COG, 2014).

Kern Council of Governments Congestion Management Program

All urbanized areas with a population larger than 200,000 residents are required to have a Congestion Management System, program, or process. Kern COG refers to its congestion management activities as the Congestion Management Program (CMP). Kern COG was designated as the Congestion Management Agency.

The CMP provides a systematic process for managing congestion and information regarding (1) transportation system performance and (2) alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The purpose of the CMP is to ensure that a balanced transportation system is developed that relates population growth, traffic growth and land use decisions to transportation system LOS performance standards and air quality improvement. The program attempts link land use, air quality, transportation, advanced transportation technologies as integral and complementary parts of this region's plans and programs.

The purpose of defining the CMP network is to establish a system of roadways that will be monitored in relation to established LOS standards. At a minimum, all state highways and principal arterials must be designated as part of the Congestion Management System of Highways and Roadways. Kern County has 18 designated state highways.

The Kern County Airport Land Use Compatibility Plan (ALUCP) establishes procedures and criteria to assist Kern County and affected incorporated cities in addressing compatibility issues for the proposed project regarding airports and the land uses around them.

Environmental Setting

The proposed project would be located in Kern County east of SR 14, near the intersection of SR 14 and SR 58, approximately 7 miles north of the community of Rosamond and 6 miles south of the community of Mojave. The circulation system in the vicinity of the project is made up of a combination of state- and county-jurisdiction facilities. Major components of the system are discussed in the following subsections and shown in Figure 2-1 of Chapter 2, *Project Description*.

Regional Setting

The project site is located in proximity to two major highways that would provide access to the general vicinity of the site. SR 14 and SR 58 could be used to provide regional access to the project site from the north, east, west, or south.

Major Highways

SR 14 is a four-lane divided highway that aligns north-south within the vicinity of the site. SR 14 extends south from the project site through Rosamond, passing through Lancaster and Palmdale, eventually turning to the southeast toward Santa Clarita. To the north, SR 14 passes west of Ridgecrest, eventually merging with SR 395 to the northeast.

SR 58 is a four-lane divided highway that runs generally east-west across Kern County, connecting Bakersfield, Tehachapi, and Mojave to Lenwood and Barstow to the east. In the project vicinity SR

58 bypasses Mojave, but a connector is also provided which intersects SR 14 northwest of the project site.

Interstate Highway 5 (**I-5**) is a major four-lane divided freeway that covers the entire country north-south and provides access for goods movement, shipping, and travel. This highway crosses through the western portion of Kern County and is designated as an arterial/major highway by the Kern County General Plan Circulation Element. The site is located approximately 50 miles east of I-5.

Alternative Transit Facilities

Public transportation in Kern County is provided by Kern Regional Transit, which offers 16 fixed routes throughout the county and a dial-a-ride general public transportation service for residents in Frazier Park, Kern River Valley, Lamont, Mojave, Rosamond, and Tehachapi. No public transit routes pass or stop near the site.

Non-Motorized Transportation

There are no dedicated pedestrian or bicycle facilities in the immediate vicinity of the site or along the surrounding roadways. The nearest pedestrian and bicycle facilities to the site are located within the community of Mojave, approximately 6 miles to the northwest of the project.

Local Setting

All vehicles would use SR 14 as regional access to the site via ramps within the Backus Road interchange. Backus Road is a two-lane undivided roadway that connects with the following two-lane local roadways to provide the travel path to and from the project site: Sierra Highway, Sopp Road, and Lone Butte Road. As shown in **Table 3.15-1**, local intersections currently operate at LOS A (traffic counts were conducted in November 2017).

TABLE 3.15-1
SUMMARY OF EXISTING LOS CONDITIONS

	AM Peak Hour	PM Peak Hour
Study Intersection	**Delay – LOS**	**Delay – LOS**
1. SR 14 Southbound Ramps / Backus Rd	9.0 – A	9.0 – A
2. SR 14 Northbound Ramps / Backus Rd	9.0 – A	9.2 – A
3. Sierra Highway / Backus Rd	8.5 – A	8.5 – A
4. Sierra Highway / Sopp Rd	9.1 – A	9.4 – A

Note: Delay shown in seconds per vehicle.

SOURCE: Dudek, 2018.

3.15.2 Environmental Consequences

This EIS/EIR section describes the environmental consequences relating to transportation for the proposed project. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.15.2.1 Assessment Methods/Methodology

The majority of construction vehicle trips would be associated with construction employees traveling to and from the work sites (at the project site and along the gen-tie line corridor) during peak weekday hours. Project construction is expected to rely mostly on Kern County's skilled labor pool; therefore, the project's construction-related traffic is anticipated to be local in nature. It is assumed that construction staff not drawn from the local labor pool would stay in the local hotels in, Rosamond, Mojave, Lancaster, Palmdale or other nearby cities, so the workers would not have to travel far or add traffic to roads outside of the vicinity of the project site.

System and materials delivery trips are anticipated to travel to and from the site during both peak and nonpeak periods. Heavy equipment used at the site would not be hauled to and from the site daily, but would be brought in at the beginning of construction and taken out upon completion of construction.

This traffic impact analysis evaluates the following four unsignalized intersections in the vicinity of the project:

1. SR 14 Southbound Ramps / Backus Road (stop sign on off-ramp)
2. SR 14 Northbound Ramps / Backus Road (stop sign on off-ramp)
3. Sierra Highway / Backus Road (stop sign on Backus Road)
4. Sierra Highway / Sopp Road (stop sign on Sopp Road)

Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant related to transportation if it would result in any of the effects listed below. These effects are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice. The project would cause a significant impact related to traffic and transportation if it would:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit
- Conflict with an applicable congestion management program, including, but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways, as follows:
  - Metropolitan Bakersfield General Plan LOS C
  - Kern County General Plan LOS D
- Substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Result in inadequate emergency access
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

The County determined in the NOP (see Appendix A1) that the following environmental issue areas would result in no impacts or less-than-significant impacts and was therefore scoped out of requiring further review in this EIS/EIR.

- Conflict with an applicable congestion management program, including, but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways, as follows:
- Metropolitan Bakersfield General Plan LOS C Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

Please refer to Appendix A1 of this EIS/EIR for a copy of the NOP and additional information regarding these issues.

3.15.3 Analysis of Environmental Effects

Alternative A: 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Construction

Construction of Alternative A (solar arrays and gen-tie line to connect to the grid) would generate vehicle trips by construction workers and material-carrying trucks during the anticipated two-year construction period. Trip generation forecasts were developed for scenarios occurring under both peak project construction and project operation. Given the substantially higher level of trip generation for construction, the peak construction trip generation scenario is considered the condition for the lifecycle of the proposed project and thus would provide the most conservative estimate.

According to Kern County Ordinance Section 8.36.020, all construction shall be limited to the hours of 6:00 a.m. to 9:00 p.m. Therefore, construction may occur during a.m. peak (7:00 to 9:00 a.m.) or p.m. peak (4:00 to 6:00 p.m.) commute periods.

The onsite assembly and construction workforce is estimated to reach a peak of approximately 550 workers; the construction workforce for the gen-tie line is estimated to reach a peak of approximately 72 workers. Construction of the gen-tie line would overlap with the peak construction period of the solar array during a nine-month period, and the combined workforce during concurrent construction of the solar array and gen-tie line during that period is the focus of the impact analysis presented below. This analysis conservatively assumes all construction-related employees would arrive at their work sites during the a.m. peak hour and depart the sites during the p.m. peak hour, and that there would be limited carpooling activity to and from the project site by construction workers. Water usage for dust control during construction is estimated to require up to 50 trucks (100 one-way trips) per day, and materials delivery trucks (for solar array and gen-tie construction) are estimated at up to 640 one-way trips per day. It is assumed that the great majority of trucks trips would occur outside the peak traffic hours.

As shown in **Table 3.15-2**, construction-related activity associated with the proposed project is forecast to generate up to approximately 1,956 daily trips, which include approximately 644 a.m. peak-hour trips and approximately 644 p.m. peak-hour trips.

TABLE 3.15-2
CONSTRUCTION-RELATED PEAK TRIP GENERATION
(DURING THE NINE-MONTH PERIOD OF CONCURRENT CONSTRUCTION OF SOLAR ARRAY AND GEN-TIE LINE)

	AM Peak Hour Trips			PM Peak Hour Trips			
Trip Generation Source	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily Trips**
Onsite Employees	608	0	608	0	608	608	1,216
System/Materials/Water Delivery	18	18	36	18	18	36	740
Total	**626**	**18**	**644**	**18**	**626**	**644**	**1,956**

SOURCE: ESA, 2018; Dudek, 2018.

Based on review of the project's planned site access, nearby circulation facilities, and proximity to urbanized communities, it is assumed that approximately 85 percent of the project-generated trips would travel to/from the south, and 15 percent would travel to/from the north. Therefore, approximately 548 peak-hour construction trips are forecast to travel to/from the south and 96 trips to/from the north. During the period of overlapping construction, construction workers and trucks would travel to/from the project sites (solar array and gen-tie line options east of SR 14) using SR 14 at Backus Road, along Sierra Highway to Sopp Road, and along Lone Butte Road to the project sites.

The traffic assessment for Alternative A evaluates LOS conditions without and with project construction traffic at four intersections. LOS is a qualitative measure (with six grades, A to F) of the degree of congestion and delay at intersections. For example, according to the Highway Capacity Manual, LOS A occurs on at an unsignalized intersection when the average stopped delay is no more than 10.0 seconds per vehicle stopped on the side street at that intersection (Transportation Research Board, 2000). **Table 3.15-3** presents descriptions of LOS A through F.

TABLE 3.15-3
LEVEL OF SERVICE DESCRIPTIONS

LOS	Description
A	No delay for stop-controlled approaches.
B	Operations with minor delay for stop-controlled approaches.
C	Operations with moderate delays for stop-controlled approaches.
D	Operations with increasingly unacceptable delays for stop-controlled approaches.
E	Operations with high delays, and long queues for stop-controlled approaches.
F	Operations with extreme congestion and with very high delays and long queues unacceptable to most drivers on stop-controlled approaches.

SOURCE: Transportation Research Board, 2000.

As shown in **Table 3.15-4**, with the addition of project construction-generated trips, the average vehicle delay at all study area intersections would increase, but traffic operations would continue at an acceptable LOS during both peak traffic hours, except at the Sierra Highway / Sopp Road intersection, which would operate at an unacceptable LOS F during the a.m. peak hour. This would be a short-term, direct, adverse impact on transportation conditions. However, after implementation of Mitigation Measure MM 3.15-1a for the solar facility portion of the project site as well as Mitigation Measures MM 3.15-1b and MM 3.15-2b for the gen-tie portion of the project, construction-related impacts would be less than significant. See Section 3.15.5 for mitigation measures.

TABLE 3.15-4
SUMMARY OF LEVEL OF SERVICE (LOS) CONDITIONS –
EXISTING AND EXISTING PLUS ALTERNATIVE A CONSTRUCTION

	Existing Conditions		Existing with Alternative A Construction		
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
Study Intersection	**Delay – LOS**	**Delay – LOS**	**Delay – LOS**	**Delay – LOS**	**Significant Impact?**
1. SR 14 SB Ramps / Backus Rd	9.0 – A	9.0 – A	10.1 – B	16.3 – C	No
2. SR 14 NB Ramps / Backus Rd	9.0 – A	9.2 – A	28.2 – D	16.4 – C	No
3. Sierra Highway / Backus Rd	8.5 – A	8.5 – A	17.1 – C	8.5 – A	No
4. Sierra Highway / Sopp Rd	9.1 – A	9.4 – A	59.3 – F	25.6 – D	Yes

Notes: Delay shown in seconds per vehicle; SB = Southbound, NB = Northbound. The relative effect of project-generated traffic on LOS (e.g., LOS A to LOS F during the a.m. peak hour, versus LOS A to LOS D during the p.m. peak hour, at the Sierra Highway / Sopp Road intersection) is a function of the directionality of the project trips and the intersection turning movements that would be affected by the project traffic. That is, during the a.m. peak hour, project-generated trips would increase the left turn volume on southbound Sierra Highway, which is more susceptible to delays than the westbound right turns from Sopp Road that the project would increase during the p.m. peak hour.

SOURCES: Dudek, 2018;
.

Operation and Maintenance

Operation and maintenance of Alternative A would consist of equipment inspection, routine maintenance, and replacement and would occur primarily during daylight hours. As the project's photovoltaic (PV) arrays would passively produce electricity, maintenance requirements would be very minimal. Unplanned maintenance would typically be responded to as needed depending on the event. Approximately up to 24 personnel would be required for ongoing operation, maintenance, and security.

During project operations, routine washing of the PV modules is not anticipated to be required; however, the PV panel surfaces may be washed seasonally to increase the average optical transmittance of the flat panel surface. Panel washing is not expected to exceed three times per year, but operational decisions regarding panel washing would be made based upon real-time conditions, and there may be years where no panel washing is required. Additional water delivery would be needed once per year to supply water to those buildings with sinks and toilets.

Post-project construction traffic volumes (without project operation and maintenance trips) were derived by applying an annual growth rate of 3.27 percent per year (based on historical traffic counts maintained by Caltrans) to existing traffic volumes to account for background and cumulative growth. Traffic operating conditions at all study intersections would be LOS A without or with Alternative A. Operation and maintenance of Alternative A would cause a less-than-significant impact on transportation conditions; no mitigation measures would be required.

Decommissioning

Prior to decommissioning, a decommissioning environmental impact analysis will be completed to assess how all site improvements should be dismantled and removed from the site consistent with the lease.

CEQA: Impact Significance Determination

Impact 3.15-1: The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

As discussed in the NEPA analysis, above, construction, operation and maintenance, and decommissioning activities associated with the proposed project would increase traffic volumes on area roadways, and project construction-and decommissioning-generated traffic would cause traffic conditions to degrade to an unacceptable LOS at one of the study intersections. That change in LOS would be considered a significant impact, requiring measures to mitigate the impacts to a less-than-significant level. Impacts under project operation and maintenance would be less than significant; no mitigation would be required.

Mitigation Measures

Not required but suggested implementation of Mitigation Measures 3.15-1a and 3.15-1b (see Section 3.15.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.15-2: The project would conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards developed by the County congestion management agency for designated roads or highways.

As discussed above for Impact 3.15-1, the four intersections in the vicinity of the project site would maintain an acceptable LOS throughout construction, operation, and decommissioning of the proposed project, with the exception of the Sierra Highway / Sopp Road intersection during the a.m. peak hour, and the LOS at that intersection would exceed Kern County LOS thresholds, and the project would not be in compliance with established Kern County General Plan LOS Standards. Therefore, the traffic created by the proposed project during the construction and decommissioning phases would result in a substantial increase in congestion, and impacts would be significant, requiring measures to mitigate the impacts to a less-than-significant level. During project operation

and maintenance, project-related traffic would not cause the LOS at the study intersections to exceed the Kern County LOS thresholds, and impacts under lower-trip-generating proposed project operation and maintenance would be less than significant; no mitigation would be required.

Mitigation Measures

Implement Mitigation Measures MM 3.15-1a, MM 3.15-1b, and 3.15-2b (see Section 3.15.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.15-3: The project would substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

During construction, the proposed project would require the delivery of heavy construction equipment and PV solar components using area roadways, some of which may require transport by oversize vehicles. The use of oversize vehicles during construction can create a hazard to the public by limiting motorist views on roadways and by the obstruction of space, which is considered a potentially significant impact.

The need for and number of escorts, California Highway Patrol escorts, as well as the timing of transport, would be at the discretion of Caltrans and Kern County, and would be detailed in respective oversize load permits. To ensure that construction-related oversize vehicle loads are in compliance with applicable California Vehicle Code sections and California Street and Highway Codes applicable to licensing, size, weight, load, and roadway encroachment of construction vehicles, Mitigation Measure MM 3.15-1a for the solar facility portion of the project site and Mitigation Measure 3.15-1b for the gen-tie portion of the project, would require that all oversize vehicles used on public roadways during construction obtain required permits and approval of a Construction Traffic Control Plan, as well as identify construction delivery times and vehicle travel routes in advance to minimize construction traffic during a.m. and p.m. peak hours. With Mitigation Measures MM 3.15-1a and MM 3.15-1b, potential impacts would be reduced to a less-than-significant level.

To ensure that the design of any new access and internal site roadways are compliant with all Kern County regulations and not result in increased hazards, MM 3.15-1a and MM 3.15-2b require the project proponent to obtain Kern County approval of all proposed access road design prior to construction. With Mitigation Measures MM 3.15-1a and MM 3.15-2b, potential impacts would be reduced to a less-than-significant level.

Mitigation Measures

Implement Mitigation Measure MM 3.15-1a and MM 3.15-1b (see Section 3.15.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 3.15-4: The project would result in inadequate emergency access.

The project site is located in a rural area with roadways (existing and to be built as part of the project) that allow adequate egress/ingress to the site in the event of an emergency. Additionally, as part of the proposed project, internal access roadways would be constructed. Therefore, the presence of the proposed project would not physically interfere with emergency vehicle access or personnel evacuation from the site.

The project would not require closures of public roads, which could inhibit access by emergency vehicles. There are no businesses, residences, or emergency response stations in the immediate vicinity of the project site; therefore, it is not likely that heavy construction-related traffic or operational traffic would interfere with emergency response vehicles and personnel in the area. As described above, increased project-related traffic would not cause a significant increase in congestion and or significantly worsen the existing service levels at intersections on area roads; therefore, project-related traffic would not indirectly affect emergency access to the project site or any other surrounding location. For these reasons, the project would have a less-than-significant impact on emergency access.

While impact would be less than significant, Mitigation Measure MM 3.15-1a for the solar facility portion of the project site and Mitigation Measure MM 3.15-1b for the gen-tie portion of the project, which requires the preparation of a construction traffic control plan that requires access for emergency vehicles to the project site, would provide further assurances for emergency access. Mitigation Measures MM 3.15-1a and MM 3.15-1b requires the developer obtain Kern County approval of all proposed access road design prior to construction, further ensuring onsite emergency access is adequate.

Mitigation Measures

Implement Mitigation Measure MM 3.15-1a and MM 3.15-1b (see Section 3.15.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Alternative B: 1,500-Acre EUL

NEPA: Environmental Impacts

Construction

Given that Alternative B includes the construction of a solar facility on a site about 60 percent smaller than Alternative A, the onsite assembly and construction workforce is estimated to reach a peak of approximately 220 workers; like Alternative A, the construction workforce for the gen-tie line is estimated to reach a peak of approximately 72 workers. Construction of gen-tie line would overlap with the peak construction period of the solar array, and the combined workforce during concurrent construction of the solar array and gen-tie line during that overlap period is the focus of the impact analysis presented below. Also like Alternative A, it is conservatively assumed that all construction-related employees would arrive and depart during the a.m. and p.m. peak hours,

respectively, that there would be limited carpooling activity by construction workers, and that the great majority of truck trips under Alternative B would occur outside the peak traffic hours.

Project trip distribution would be the same as for Alternative A. With approximately 267 peak hour construction trips travelling to/from the south and 47 trips to/from the north, the addition of project construction-generated trips would cause the average vehicle delay at all study area intersections to increase slightly, but traffic operations would continue at an acceptable LOS during both peak traffic hours (see **Table 3.15-5**). The traffic operation changes would be detectable, but would not have an overall effect on transportation conditions.

TABLE 3.15-5
SUMMARY OF LEVEL OF SERVICE (LOS) CONDITIONS – EXISTING AND EXISTING PLUS ALTERNATIVE B CONSTRUCTION

	Existing Conditions		Existing with Alternative B Construction		
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
Study Intersection	**Delay – LOS**	**Delay – LOS**	**Delay – LOS**	**Delay – LOS**	**Significant Impact?**
1. SR 14 SB Ramps / Backus Rd	9.0 – A	9.0 – A	9.3 – A	11.5 – B	No
2. SR 14 NB Ramps / Backus Rd	9.0 – A	9.2 – A	9.9 – A	10.4 – B	No
3. Sierra Highway / Backus Rd	8.5 – A	8.5 – A	9.7 – A	8.5 – A	No
4. Sierra Highway / Sopp Rd	9.1 – A	9.4 – A	12.4 – B	10.3 – B	No

Note: Delay shown in seconds per vehicle; SB = Southbound, NB = Northbound.
SOURCE: ESA, 2018; Dudek, 2018.

Operation and Maintenance

Operation and maintenance of Alternative B would be similar to that for Alternative A. Because of its reduced size relative to Alternative A, up to approximately 12 personnel would be required for ongoing operation, maintenance, and security. With the lower vehicle trip generation under Alternative B, traffic operating conditions at all study intersections would be LOS A without or with Alternative B. Consequently, transportation–related impacts associated with operation and maintenance of Alternative B would be reduced relative to Alternative A, causing a less-than-significant impact on transportation conditions; no mitigation measures would be required.

Decommissioning

Because of its reduced size, it is anticipated that decommissioning activities would require fewer workers and trucks for Alternative B compared to Alternative A. Consequently, transportation–related impacts associated with decommissioning of Alternative B would be reduced relative to the decommissioning of Alternative A.

CEQA: Impact Significance Determination

Because Alternative B would result in approximately 40 percent of the physical development of Alternative A, it is likely that this alternative would result in a reduced construction schedule, thereby reducing the number of construction workers and trucks, resulting in a reduction in the vehicle trip generation associated with construction. As discussed above, construction of Alternative B would have less-severe (indeed less-than-significant) significance conclusions for the impacts identified for each phase of Alternative B (construction, operation and maintenance, and decommissioning) as for Alternative A. Mitigation Measure MM 3.15-1a for the solar facility portion of the project site and Mitigation Measure MM 3.15-1b for the gen-tie portion of the project, would require that all oversize vehicles used on public roadways during construction obtain required permits and approval of a Construction Traffic Control Plan, as well as identify construction delivery times and vehicle travel routes in advance to minimize construction traffic during a.m. and p.m. peak hours. With Mitigation Measures MM 3.15-1a and MM 3.15-1b, potential impacts would be reduced to a less-than-significant level. Impacts under project operation and maintenance under Alternative B would be less than significant; no mitigation would be required.

Mitigation Measures

Implement Mitigation Measures MM 3.15-1a and MM 3.15-1b (see Section 3.15.5 for mitigation measures).

Level of Significance after Mitigation

Impacts would be less than significant.

Alternative C: No Action/No Project

NEPA: Environmental Impacts

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to the existing traffic conditions on area roadways as described previously. As shown in Table 3.15-3, intersections in the study area currently operate at excellent levels of service (LOS A) during the peak traffic hours. There would be no construction vehicles (workers or trucks), or operation and maintenance employees and trucks to access the site; therefore, there would be no adverse impacts on transportation conditions during the construction, operation and maintenance, and decommissioning phases.

CEQA: Impact Significance Determination

Alternative C would result in no impacts to existing transportation conditions on area roadways.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

No Impacts

3.15.4 Cumulative Impact Analysis

NEPA: Cumulative Environmental Effects and Their Significance

The potential for cumulative transportation impacts exists where there are multiple projects proposed in an area that have overlapping construction schedule and/or project operations that could affect similar resources. Projects with overlapping construction schedules and/or operations could result in a substantial contribution to increased traffic levels throughout the surrounding roadway network. As discussed previously, the addition of project construction-generated trips (under Alternative A) would cause one of the study area intersections (Sierra Highway / Sopp Road) to degrade from an acceptable LOS to an unacceptable LOS. This would be a short-term, direct, adverse impact on transportation conditions; implementation of identified mitigation measures would reduce the impact to a less-than-adverse effect. The addition of project construction-generated trips under Alternative B would now cause any of the study area intersections to degrade from an acceptable LOS to an unacceptable LOS (a less-than-significant impact on transportation conditions, and no mitigation measures would be required). Operation and maintenance activity would cause a less-than-significant impact on transportation conditions, and no mitigation measures would be required. However, cumulative impacts could result if the project's incremental effect after mitigation were combined with impacts of other past, present, and reasonably foreseeable future projects.

Cumulative impacts from the project would be most intense during project construction. After construction, there would be minimal trip generation and less-than-significant cumulative impacts during operation of the project.

For purposes of the analysis, the geographic scope for cumulative impacts to transportation and traffic is Kern County as a whole, but with specific focus on projects within 6 miles of the project that have been constructed, or are currently under construction, planned, or approved and, in particular, projects that would generate traffic on the same affected roadway segments as the project. Related projects within 6 miles of the project are the only ones likely to contribute traffic to the relevant intersections, if constructed concurrently.

Future development within the county, such as other large solar energy projects, would generate a large number of trips to and from the respective project site, using local roadways. Multiple projects, including several utility-scale solar and wind energy production facilities, are proposed throughout Kern County. Many are located, like the project site, in the Mojave Desert. As shown in Table 3-1, there are solar energy projects proposed within the vicinity of the project site. The majority of the 35 solar development projects in Kern County have similar transportation cumulative impacts as the proposed project. Of these 35 projects within the vicinity of the proposed project, eight have been selected for this analysis that would result in impacts similar to the proposed project. These projects include Recurrent Energy (RE) Columbia, RE Columbia Two, RE Columbia 3 (all approved in 2011), RE Rio Grande (approved 2011), RE Rosamond One, RE Rosamond Two (each approved 2011), High Desert Solar (status unavailable), and Mojave Solar Park (status unavailable). Similar to the proposed project, the transportation impacts of solar projects within the vicinity are cumulatively considerable with respect to construction. These impacts were determined to be high increases in traffic volumes during the temporary construction

periods with minimal operations-related traffic following. However, the impacts from these related projects were determined to be less than significant with implementation of mitigation measures. Similarly, impacts from the proposed project in conjunction with surrounding projects have also been determined to be less than significant with the implementation of mitigation measures. The significance determination is based on the conclusion that construction of these projects would result in a potentially short-term, direct, adverse increase in temporary delays and construction vehicle trips on the local roadway network, but that implementation of Mitigation Measures MM 3.15-1a for the solar facility portion of the project site and Mitigation Measure MM 3.15-1b for the gen-tie portion of the project, would reduce the temporary construction traffic impacts of the proposed project individually, and minimize the project's contribution to cumulative traffic impacts.

As noted, Alternative A would add about 644 peak-hour construction trips to the four analyzed intersections, which would result in short-term, adverse impacts on the LOS at one of those intersections. Related projects located within 6 miles of the project site, shown in **Table 3.15-6**, include RE Columbia, Columbia Two, and Columbia Three solar projects, the RE Rio Grande Solar Project, and the RE Rosamond One and Rosamond Two solar projects (there is currently insufficient project description information and associated trip generation data available for other proposed projects within 6 miles of the project site, such as Mojave Solar Park, and High Desert Solar by Element Power Project). As shown in Table 3.15-6, construction-related activity associated with concurrent construction of those related projects and the proposed project is forecast to generate approximately 2,530 daily trips.

TABLE 3.15-6
ESTIMATED AVERAGE DAILY TRIPS – CUMULATIVE PROJECTS

Project	Peak number of construction workers	Estimated daily vehicular trips
Edwards AFB EUL Solar Project	622	1,956
RE Columbia, Columbia Two, and Columbia Three solar projects [a]	92	192
RE Rio Grande Solar Project	53	108
RE Rosamond One and Rosamond Two solar projects [b]	119	274
Total	**886**	**2,530**

[a] Because these solar projects would be constructed concurrently, the total trip generation for these three proposed solar facilities are reported.
[b] Because these solar projects would be constructed concurrently, the total trip generation for these two proposed solar facilities are reported.

SOURCE: Kern County, 2018.

The proposed project traffic impact analysis estimates for vehicle trips are conservatively based on maximum worker trips and factor flexibility into the construction assumptions. Additionally, the estimates conservatively assume that all worker trips would occur within the two peak traffic hours

(i.e., all workers would arrive during the same hour in the morning and depart during the same hour in the afternoon). However, this level of vehicle trips would only occur if the pace of construction is accelerated to make up for schedule deficiencies.

Area roadways and intersections currently operate at LOS A, and the described projects' construction schedules are likely to overlap to some degree and could potentially generate a significant cumulative increase of 2,530 daily trips on those roads. Cumulative impacts would be greatest if the peak construction period of all of these projects overlapped. Although this scenario is unlikely, if it were to occur, it is likely that the LOS of the affected intersections would degrade to unacceptable service levels of LOS D or worse, given that the project's adverse impacts to area intersections. However, Mitigation Measures MM 3.15-1a for the solar facility portion of the project site and Mitigation Measure MM 3.15-1b for the gen-tie portion of the project, include measures such as provision of traffic control by flaggers at area intersections. With the implementation of the proposed mitigation measures, construction of the proposed project would not result in a cumulative impact related to traffic.

Many of the other solar projects listed in Table 3-1 are located a greater distance away from the proposed project. In addition, future residential development of Kern County would also increase the overall number of vehicle trips within the County, but those developments also are located farther away from the proposed project. While the construction schedules for several of these projects may overlap with that of the proposed project, they are several miles away, and their construction vehicles are not likely to travel extensively on the road segments that are in the vicinity of the project site. Although they may use SR 14, much of the traffic created by the cumulative projects is likely to disperse in different directions, using various highways and roadways. Additionally, the peak construction traffic created by the cumulative projects would be temporary, and their onsite operations staff would be minimal and would not create considerable permanent increases to nearby traffic volumes.

On the project-level, with implementation of mitigation measures, Alternative A would not create adverse impacts on transportation conditions. Additionally, Alternative A's contribution to potential cumulative impacts would be temporary and would fall to nominal levels upon completion of construction. Therefore, impacts of Alternative A combined with impacts from past, present, or reasonably foreseeable projects in the vicinity would result in less-than-significant cumulative impacts related to transportation conditions.

CEQA: Cumulative Impact Significance Determination

As discussed previously in the NEPA analysis in this section, construction of the project and related projects would result in a potentially short-term, direct, adverse increase in temporary delays and construction vehicle trips on the local roadway network. Cumulative impacts would be greatest if the peak construction period of all of the area projects overlapped. Although this scenario is unlikely, if it were to occur, it is likely that the LOS of the affected intersections would degrade from LOS A to an unacceptable LOS D or worse, given the project's significant impacts to area intersections. However, implementation of mitigation measures (see Section 3.15.5) includes measures such as provision of traffic control by flaggers at area intersections. With the

implementation of the proposed mitigation measures, the proposed project's contribution to potential cumulative impacts would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.15-1a, MM 3.15-1b, and MM 3.15-2b (see Section 3.15.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be less than significant.

3.15.5 Mitigation Measures

Solar Facility Mitigation Measures

MM 3.15-1a: Traffic Control Plan. Prior to the issuance of construction or building permits, the project proponent shall:

1. Prepare and submit a Construction Traffic Control Plan to Kern County Public Works Department- Development Review and the California Department of Transportation offices for District 9, as appropriate, for approval. The Construction Traffic Control Plan must be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and must include, but not be limited to, the following issues:
    a. Timing of deliveries of heavy equipment and building materials;
    b. Directing construction traffic with a flag person;
    c. Placing temporary signing, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic;
    d. Ensuring access for emergency vehicles to the project sites;
    e. Temporarily closing travel lanes or delaying traffic during materials delivery, transmission line stringing activities, or any other utility connections;
    f. Maintaining access to adjacent property; and,
    g. Specifying both construction-related vehicle travel and oversize load haul routes, minimizing construction traffic during the AM and PM peak hour, distributing construction traffic flow across alternative routes to access the project sites, and avoiding residential neighborhoods to the maximum extent feasible.
2. Obtain all necessary encroachment permits for the work within the road right-of-way or use of oversized/overweight vehicles that will utilize county maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the approved traffic plan and issued permits shall be submitted to the Kern County Planning and Natural Resources Department and the Kern County Public Works Department-Development Review.
3. Prior to construction, the project proponent shall submit engineering drawings of proposed access road design for the review and approval of the Kern County Public Works Department.

4. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the state and/or Kern County.
5. Submit documentation that identifies the roads to be used during construction. The project proponent shall be responsible for repairing any damage to non-county maintained roads that may result from construction activities. The project proponent shall submit a preconstruction video log and inspection report regarding roadway conditions for roads used during construction to the Kern County Public Work Department-Development Review and the Kern County Planning and Natural Resources Department.
6. Within 30 days of completion of construction, the project proponent shall submit a post-construction video log and inspection report to the County. This information shall be submitted in DVD format. The County, in consultation with the project proponent's engineer, shall determine the extent of remediation required, if any.

Gen-tie Mitigation Measures

MM 3.15-1b: Remove Easement Obstructions. All easements shall be kept open, clear, and free from buildings and structures of any kind pursuant to Chapters 18.50 and 18.55 of the Kern County Land Division Ordinance. All obstructions, including utility poles and lines, tees, pole signs, or similar obstructions, shall be removed from the ultimate road rights-of way in accordance with Section 18.55.030 of the Land Division Ordinance. Compliance with this requirement is the responsibility of the applicant/project proponent and may result in significant financial expenditures.

MM 3.15-2b: Traffic Control Plan. Prior to the issuance of construction or building permits, the project proponent shall:

1. Prepare and submit a Construction Traffic Control Plan to Kern County Public Works Department- Development Review and the California Department of Transportation offices for District 9, as appropriate, for approval. The Construction Traffic Control Plan must be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and must include, but not be limited to, the following issues:
    a. Timing of deliveries of heavy equipment and building materials;
    b. Directing construction traffic with a flag person;
    c. Placing temporary signing, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic;
    d. Ensuring access for emergency vehicles to the tie-line sites;
    e. Temporarily closing travel lanes or delaying traffic during materials delivery, transmission line stringing activities, or any other utility connections;
    f. Maintaining access to adjacent property; and,
    g. Specifying both construction-related vehicle travel and oversize load haul routes, minimizing construction traffic during the AM and PM peak hour, distributing construction traffic flow across alternative routes to access the gen-tie sites, and avoiding residential neighborhoods to the maximum extent feasible.

2. Obtain all necessary encroachment permits for the work within the road right-of-way or use of oversized/overweight vehicles that will utilize county maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the approved traffic plan and issued permits shall be submitted to the Kern County Planning and Natural Resources Department and the Kern County Public Works Department-Development Review.
3. Prior to construction, the project proponent shall submit engineering drawings of proposed access road design for the review and approval of the Kern County Public Works Department.
4. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the state and/or Kern County.
5. Submit documentation that identifies the roads to be used during construction. The project proponent shall be responsible for repairing any damage to non-county maintained roads that may result from construction activities. The project proponent shall submit a preconstruction video log and inspection report regarding roadway conditions for roads used during construction to the Kern County Public Work Department-Development Review and the Kern County Planning and Natural Resources Department.
6. Within 30 days of completion of construction, the project proponent shall submit a post-construction video log and inspection report to the County. This information shall be submitted in DVD format. The County, in consultation with the project proponent's engineer, shall determine the extent of remediation required, if any.

3.15.6 Residual Impacts after Mitigation

Mitigation Measures MM 3.15-1a, MM 3.15-1b, and MM 3.15-2b would substantially reduce impacts associated with the delivery of heavy construction equipment, PV solar components, and gen-tie line components using area roadways, some of which may require transport by oversize vehicles, which can create a hazard to the public by limiting motorist views on roadways and by the obstruction of space (considered a potentially significant impact). The measure also requires that necessary permits be obtained.

No residual impacts are expected to occur as a result of construction, operation and maintenance, and/or decommissioning of the proposed project or as a result of an alternative.

3.16 Hydrology and Water Quality

3.16.1 Affected Environment

This section of the EIS/EIR describes the affected environment for hydrology and water quality in the proposed project area, including the regulatory and environmental settings. It also describes the impacts on hydrology and water quality that result from implementation of the proposed project and mitigation measures that would reduce impacts. The technical information provided in this section is based in part on the Hydrology and Water Quality Assessment (Appendix B20), the Water Supply Assessment (Appendix B19), and the Preliminary Flood Hazard Assessment (Appendix B16), all prepared by Blue Oak Energy in June 2014. The Federal Emergency Management Agency (FEMA), which is responsible for designating flood risks, has not generated flood zone maps for the entire project area. Instead, the Hydrologic Engineering Calculator (HEC)-1 hydrodynamic modeling software, developed by the U.S. Army Corps of Engineers (USACE) was used to develop preliminary flood zone maps of the project area (Appendix B16).

3.16.1.1 Scoping Issues Addressed

The following comments related to hydrology and water quality were provided by the Regional Water Quality Control Board (RWQCB) and U.S. Environmental Protection Agency (USEPA)—these issues and concerns are addressed in this section.

- If any abandoned water wells are encountered during the construction process, the Land and Water Program should be contacted for destruction permitting procedures.
- The EIS/EIR should include sufficient detail of key project components—particularly post-construction stormwater conveyance, collection, and treatment facilities as well as associated design criteria.
- Design alternatives compatible with low-impact development (LID) should be considered, especially regarding the collection of onsite stormwater runoff and the concentrated discharge of that stormwater to natural drainage channels.
- Where feasible, existing topographic contours should be maintained and existing vegetation should be mowed to help mitigate post construction stormwater impacts.
- A project-specific Stormwater Pollution Prevention Plan (SWPPP) should be developed and prepared for both the construction and post-construction phases of the project.
- The EIS/EIR should identify post-construction stormwater management as a significant project component, and a variety of best management practices (BMPs), in particular the maintenance of native vegetation, should be evaluated.
- All rock slope protection and energy dissipation rip-rap placed within stream channels should be ungrouted and the minimum amount necessary used to provide scour protection.

During Scoping the Air Force also informed the public the project may be constructed within the 100-year floodplain and sought any concerns or comments the public may have.

3.16.1.2 Regulatory Framework

Federal

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972. Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands.

Section 401 of the CWA directs that any proponent of an action that requires a federal license or permit, such as a Section 404 or National Pollution Discharge Elimination System (NPDES) permit, must obtain a Water Quality certificate from the state water pollution control agency. The certificate certifies that the action complies with state water quality criteria. Also, Section 402 provides requirement for issuance of permits for the discharge of pollutants.

The Rivers and Harbors Action of 1899, 33 U.S. Code Section 401 establishes a program to regulate activities affecting navigable waters of the United States. Section 10 of the Act directs that project proponents must obtain a Sec 10 permit by the USACE for construction, excavation, or deposition of materials in, over, or under navigable waters, or for any work which would affect the course, location, condition, or capacity of those waters.

No waters of the United States are located on the site. Waters of the United States are defined as all waters that can be used for commerce, wetlands, waters that could affect commerce, tributaries of waters that can be used for commerce, and oceans (USEPA, 2017). The USACE has determined that all tributaries to Rosamond, Buckhorn, and Rogers Lakes, excluding Lake Palmdale and tributaries to Lake Palmdale, are non-jurisdictional by the USACE due to the Antelope Valley Watershed being an isolated, intrastate watershed without any surface-water-related commerce (File No. SPB16011-01084-SLP). Because the study area is within the Antelope Valley Watershed, none of the ephemeral drainage features delineated within the study area are under the jurisdiction of the USACE, as further discussed in Section 3.5, *Biological Resources*. Because the drainages onsite do not meet the definition of waters of the United States, the Clean Water Act, which establishes the basic structure for regulating discharges of pollutants into waters of the United States, is not applicable.

Air Force Instruction 32-7064

In regard to hydrology and water quality, Air Force Instruction (AFI) 32-7064 requires evaluation of compliance with the Clean Water Act and the Rivers and Harbors Act of 1899, as well as the protection of floodplains, floodplain boundary determination per FEMA maps, and assessment of proposed actions within a floodplain (USAF, 2016). AFI 32-7064 as released on November 22, 2016, establishes requirements to manage natural resources on Air Force installations in accordance with applicable federal, state and local laws and regulations.

Executive Order 11988, *Floodplain Management*, (24 May 1977) orders federal agencies to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplain development wherever there is a practicable alternative. The strategy will be avoidance of floodplains for all structures and pursuit of a Finding of No Practicable Alternatives (FONPA) if that strategy is not successful. If property in floodplains is proposed in real property transactions then the transaction should reference the floodplain areas and identify applicable protections and other restrictions required by Federal, State or local floodplain regulations.

State

Porter-Cologne Water Quality Control Act - State Water Resources Control Board

The Porter-Cologne Water Quality Control Act pertains to waters of the State, which has a broader definition than waters of the United States. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code Section 13050(e)). The Act requires protection of water quality by appropriate designing, sizing, and construction of erosion and sediment controls. The Act also requires the development and periodic review of water quality control plans (basin plans) that identify water quality objectives and standards as well as designate beneficial uses for California's major rivers and groundwater basins. Water quality control plans also provide the technical basis for determining waste discharge requirements, identifying enforcement actions, and evaluating clean water grant proposals.

The Porter-Cologne Act established the State Water Resources Control Board (SWRCB) and divided California into nine regions, each overseen by an RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface water and groundwater supplies and has delegated primary implementation authority to the nine RWQCBs. The Porter-Cologne Act assigns responsibility for implementing CWA Sections 401 through 402 and 303(d) to the SWRCB and the nine RWQCBs. Any person discharging waste or proposing to discharge waste within any region, other than a community sewer system, which could affect the quality of the waters of the State, must file a report of water discharge (SWRCB, 2017).

The SWRCB implementation authority for the Environmental and Sustainability Program (ESP) is the Lahontan RWQCB. The Water Quality Control Plan for the Lahontan Region sets forth water quality objectives and standards for the surface waters and groundwaters of the region, including both designated beneficial uses of water and the narrative and numerical objectives that must be maintained or attained to protect those uses (LRWQCB, 2016).

The SWRCB requires compliance with the Statewide General Waste Discharge Requirements (WDRs) for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction (Order 2004-0004-DWQ) if dredging or fill discharges to waters of the State would be less than 2/10 of an acre, 400 linear feet, and 50 cubic yards. Compliance with WDRs means that discharges from project sites cannot cause pollution, contamination or nuisances (SWRCB, 2004).

The SWRCB Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Wastewater Treatment Systems (Resolution No. 2012-0032) established a statewide, risk-based,

tier approach for the regulation and management of onsite wastewater treatment systems (OWTS) and replacements and sets the level of performance and protection expected from OWTS in order to avoid water quality degradation and protect public health. The policy is divided into five tiers and lists standards for existing and replacement OWTS, as well as corrective action requirements for failing or potentially failing systems (SWRCB, 2012).

California Department of Water Resources

The California Department of Water Resources (DWR) is a department within the California Resources Agency responsible for the State of California's management and regulation of water usage.

Title 22 of the California Code of Regulations

California Code of Regulations Title 22, Division 4 establishes both maximum contaminant levels (MCLs) and secondary MCLs that shall not be exceeded in water supplied to the public. This section is equivalent to the federal Safe Drinking Water Act. Division 4.5 establishes standards for treatment, storage, and disposal facilities (TSDF) constructed, operated, or maintained within certain distances of fault lines, floodplains, or the maximum high tide and standards for establishing groundwater and underground water above the water table zone protection.

California Water Code 10912

Section 10912 of the Water Code requires a city or county that determines that a project, as defined, is subject to the CEQA to identify any public water system that may supply water for the project and to request those public water systems to prepare a specified water supply assessment. A "project" that is subject to CEQA requires preparation of a water supply assessment if it is a proposed industrial facility occupying if they occupy more than 40 acres of land. The proposed project area encompasses approximately 4,000 acres and therefore a water supply assessment has been prepared.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) designated groundwater basins throughout California as high, medium, or low priority basins as well basins in a state of critical overdraft. SGMA requires California governments and water agencies utilizing high and medium priority groundwater basins to stop basin overdraft and restore balanced levels of pumping and recharge. SGMA requires water agencies to form Groundwater Sustainability Agencies (GSAs) to manage high and medium priority basins sustainably through the adoption Groundwater Sustainability Plans (GSPs) for the basins. For critically overdrafted basins, the deadline for sustainable management is 2040. For the remaining high and medium priority basins, the deadline for sustainable management is 2042 (DWR, 2019). The Fremont Valley Groundwater Basin (FVGB) is designated as a low priority groundwater basin under SGMA and is thus not subject to SGMA requirements (RWMG, 2018).

Local

Antelope Valley Integrated Regional Water Management Plan

The Antelope Valley Integrated Regional Water Management Plan (IRWMP) was last updated in 2013 and identifies key existing water-related challenges faced by residents of the Antelope Valley

Region, along with projections of how these challenges will change by 2035. The IRWMP provides a through inventory of possible actions to address the challenges along with their associated costs and benefits of implementation (AVRWMG, 2013).

A groundwater rights adjudication process has been underway for over 15 years to manage the basin through the Antelope Valley Integrated Regional Water Management Plan, which includes the project site. The parties to the adjudication include non-governmental overlying users, appropriative users, nonuser overlying land owners and federally reserved water rights. The case defines who controls and uses the water in the basin.

In May 2011, the Santa Clara Superior Court issued an official decision determining that the adjudication area is in a state of overdraft and establishing a safe yield for the Basin of 110,000 acre-feet-per-year (AFY), although pumping in the area has ranged up to 150,000 AFY. On December 23, 2015, Judge Komar issued a final judgment which set in motion court-directed procedures for on the Directors of the Antelope Valley-East Kern Water Agency (AVEK) to create a Watermaster Organization empowered to monitor the groundwater basin. In their first meeting of the year following settlement of long-running litigation over water rights adjudication, AVEK, as directed by the court, took action to begin the Watermaster transition process. The judgment specifies that AVEK and Los Angeles County Waterworks District 40 each occupy a seat, along with another public water supplier to be named later. The Watermaster Board will be tasked with arriving at a unanimous decision to hire the engineer who will serve as Watermaster Engineer, who will assign pumping allocations per user that will be metered and monitored on an annual basis. Any proposal associated with the ESP for pumping of groundwater will be presented to the Watermaster Engineer for review. Although not anticipated due to the minor amount of water required for the proposed project, should project water demands exceed the assigned allocation, the proposed project would not be denied access to groundwater, but may be required to pay a replenishment fee for pumpage in excess of the user's allocation.

Kern County Water Well and Small Water System Programs

The Kern County Public Health Services Department requires consultation regarding the discovery of any abandoned water wells during project construction. The Kern County Public Health Services Department's Water Well and Small Water System Programs provide appropriate well destruction procedures and permits for these activities.

Kern County Land Development Regulations

The Kern County Standards and Rules and Regulations for Land Development: Sewage Disposal, Water Supply, and Preservation of Environmental Health include requirements for developers to follow pertaining to septic systems; the standards include feasibility testing, minimum lot size, maximum ground surface grade, minimum setbacks from water wells, surface water bodies, groundwater, and bedrock.

The Kern County Local Agency Management Program for Onsite Wastewater Treatment Systems requires the Environmental Health Department approval of all new commercial use and multi dwelling unit OWTS, as well as percolation testing. According to the Program, all new and replacement OWTS, as well as repairs, must be registered with the Environmental Health

Department. Monitoring and reporting requirements to verify adequate performance are implemented as conditions of the operating permit .

Kern County General Plan

The Kern County General Plan's Land Use, Open Space, and Conservation Element establishes policies and implementation measures for hydrology and water quality, including ensuring new developments are not sited on land that is physically or environmentally constrained. Further, the General Plan would encourage preservation of the floodplain's flow conveyance, as well as ensure slope stability, adequate wastewater drainage, and effective sewage treatments in areas with steep slopes for new development. The General Plan includes goals regarding the protection and maintenance of watershed integrity, minimization of changes to natural drainage areas, and ensure that water quality standards are met for existing and future users .

Kern County General Plan Chapter 1. Land Use, Open Space, and Conservation Element

1.3 Physical and Environmental Constraints

Policies

Policy 1: Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained (Map Code 2.1 [Seismic Hazard], Map Code 2.2 [Landslide], Map Code 2.3 [Shallow Groundwater], Map Code 2.5 Flood Hazard], Map Codes from 2.6 – 2.9, Map Code 2.10 [Nearby Waste Facility], and Map Code 2.11 [Burn Dump Hazard]) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

Policy 2: In order to minimize risk to Kern County residents and their property, new development will not be permitted in hazard areas in the absence of implementing ordinance and programs. The ordinances will establish conditions, criteria and standards for the approval of development in hazard areas.

Policy 3: Zoning and other land use controls will be used to regulate and, in some instances, prohibit development in hazardous areas.

Policy 11: Protect and maintain watershed integrity within Kern County.

Implementation Measures

Measure D: Review and revise the County's current Grading Code as needed to ensure that its standards minimize permitted topographic alteration and soil erosion while maintaining soil stability.

Measure N: Applicants for new discretionary development should consult with the appropriate Resource Conservation District and the California Regional Water Quality Control Board regarding soil disturbances issues.

1.9 Resources

Policy

Policy 11: Minimize the alteration of natural drainage areas. Require development plans to include necessary mitigation to stabilize runoff and silt deposition through utilization of grading and flood protection ordinances.

1.10 General Provisions

1.10.6 Surface Water and Groundwater

Policies

Policy 33: Water related infrastructure shall be provided in an efficient and cost effective manner.

Policy 34: Ensure that water quality standards are met for existing users and future development.

Policy 40: Encourage utilization of community water systems rather than the reliance on individual wells.

Policy 41: Review development proposals to ensure adequate water is available to accommodate projected growth.

Policy 43: Drainage shall conform to the Kern County Development Standards and the Grading Ordinance.

Policy 44: Discretionary projects shall analyze watershed impacts and mitigate for construction-related and urban pollutants, as well as alterations of flow patterns and introduction of impervious surfaces as required by the California Environmental Quality Act, to prevent the degradation of the watershed to the extent practical.

Policy 46: In accordance with the Kern County Development Standards, tank truck hauling of domestic water for land developments or lots within new land developments is not permitted.

Implementation Measure

Measure Y: Promote efficient water use by utilizing measures such as:
i. Requiring water-conserving design and equipment in new construction;
ii. Encouraging water-conserving landscaping and irrigation methods; and
iii. Encouraging the retrofitting of existing development with water conserving devices.

Kern County General Plan Chapter 5. Energy Element

Policies

Policy 8: The County should work closely with local, State, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.

Policy 9: The County should develop and implement measures which result in long-term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.

The Mojave Specific Plan establishes policies, goals, and implementation measures regarding new development and adequate flood control to protect properties in the 100-year floodplain, and provide sufficient water to meet the existing and projected needs of the community

The Soledad Mountain-Elephant Butte Specific Plan identifies policies and implementation measures in regards to provisions for water supply, stormwater drainage, and compliance with the applicable Building Codes and requirements of the Public Works Department.

The West Edwards Settlement Plan establishes policies and implementation measures for water quality and drainage plans, ensuring compliance with the California Domestic Water Quality and Monitoring Regulations and the Kern County Department of Planning and Development Services, respectively.

There are no goals, policies, or implementation measures within the Actis Interim Rural Community Plan that apply to hydrology and water quality.

Kern County Grading Ordinance

The Kern County Grading Ordinance (County Municipal Code Chapter 17.28) requires a permit for all grading permit be obtained prior to commencement of construction activities. The Kern County Grading Guidelines specify the necessary actions to comply with the Kern County Grading Code for developers that require a grading permit for their grading activities. This includes preparation of grading plans that detail onsite drainage paths, grading plans and devices installed onsite to minimize runoff, erosion and sedimentation .

Kern County Floodplain Management Ordinance

The Kern County Floodplain Management Ordinance (County Municipal Code Chapter 17.48) requires the use of materials and practices during construction to avoid flood damage, and requires all new development to include a 1-foot elevation above base flood elevation, and the avoidance of flood zones by onsite waste disposal systems.

Kern County – Applicability of NPDES Program

The Kern County NPDES Applicability form determines which water quality protection measure requirements apply to different projects (if any). Regardless of whether or not the project discharges to Waters of the U.S., as long as the potential for stormwater runoff to exit the site exists, the County still requires developers to have a qualified SWPPP developer (QSD) develop a SWPPP and have a qualified SWPPP practitioner (QSP) implement associated water quality BMPs during construction . This requirement is intended to ensure that construction projects do not violate the water quality objectives and standards contained in the Water Quality Control Plan for the Lahontan Region.

The Kern County Hydrology Manual and Development Standards provide guidelines for stormwater design and properly designing drainage mitigation features including catch basins, retention basins, detention basins and levees. Division 4 of the Kern County Development Standards defined the design volume for basins as runoff from the Intermediate Storm Design Discharge (ISDD) 5-day rainfall event from the impervious area (Laughlin, 2014).

Fremont Valley Groundwater Management Plan

Although the FVGB is not subject to SGMA requirements as described above, local agencies developed a Groundwater Management Plan (GWMP) in August 2018 since groundwater is the primary water supply in the Fremont Valley. The GWMP was designed be revised if necessary to become a GSP per SGMA requirements in the future. The GWMP was written with the goal of documenting the groundwater conditions for the groundwater basin that will help inform future decisions regarding the long-term sustainable management of groundwater resources. The GWMP predicts that a heavy agricultural growth scenario (15%) could contribute to groundwater basin overdraft beginning in 2030. To help manage water resources in the face of future growth, management strategies identified in the GWMP include but are not limited to preventing the discharge of pollutants into the environment and protecting areas suitable for groundwater recharge (Woodard & Curran, 2018).

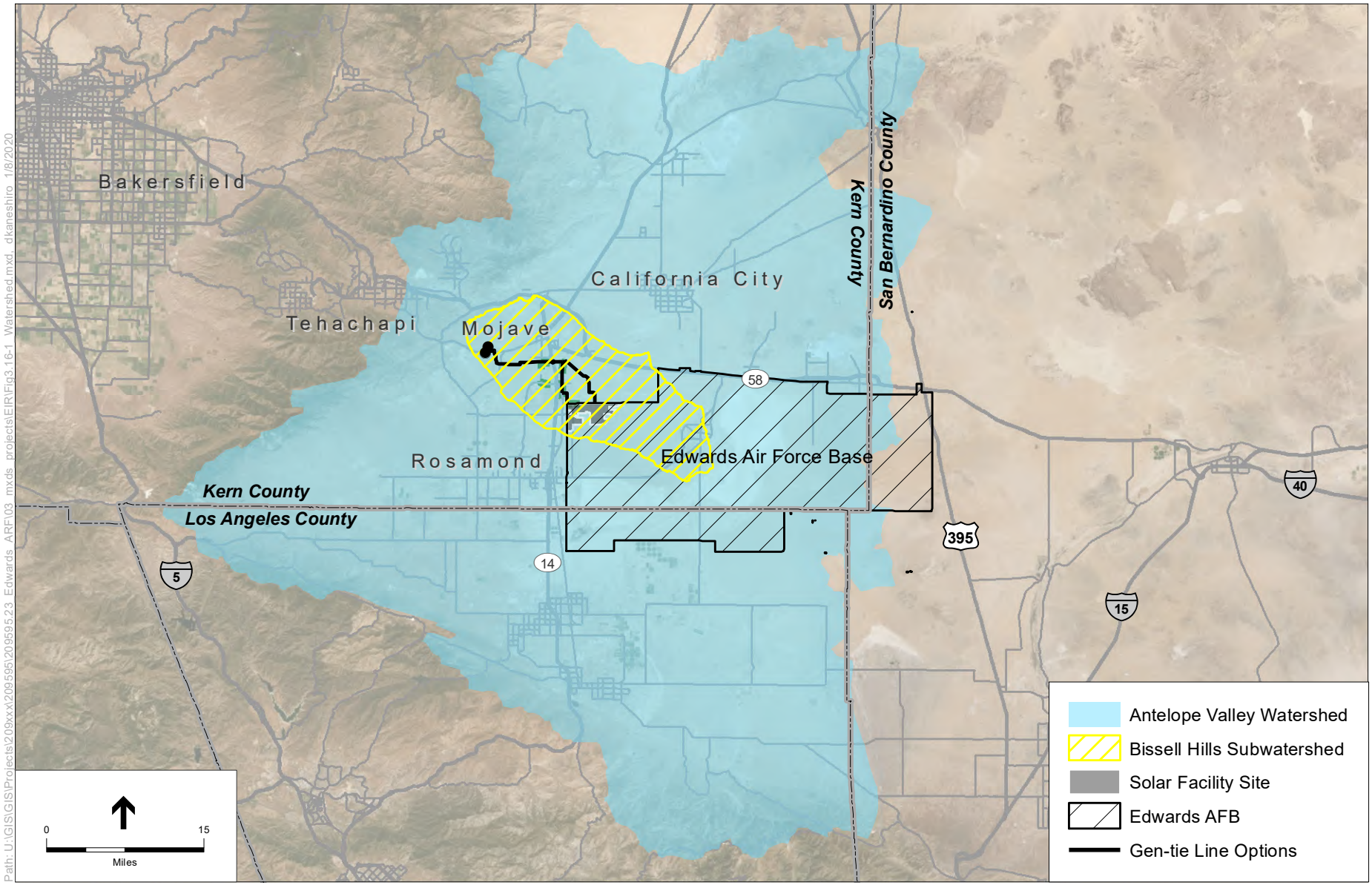
3.16.1.3 Environmental Setting

Regional Hydrology

The project site is located within the Antelope Valley Watershed, which has, no outlet to the ocean (**Figure 3.16-1**). This watershed drains a total of 3,369 square miles (approximately 1,220 square miles within Los Angeles County, 2,006 square miles within Kern County, and 143 square miles in San Bernardino County). Approximately 10 percent of land is developed within the watershed. The watershed lacks defined natural and improved channels outside of the foothills and is subject to unpredictable sheet flow patterns. Numerous streams originating in the mountains and foothills flow across the valley floor and eventually pond in the dry lakes on Edwards Air Force Base adjacent to the northern Los Angeles County line. (LACDPW, 2019). The three dry lakes include Rogers, Rosamond, and Buckhorn Dry Lakes, all of which are outside of the project site. Surface runoff that collects in the dry lakes quickly evaporates from the surface, and only a small quantity of water infiltrates to the groundwater due to the nearly impermeable nature of the playa soils. Water that does not reach these dry lakes infiltrates into underlying groundwater basins (AVRWMG, 2013).

Natural surface water features in the project area are ephemeral, meaning that they only convey flows in direct response to precipitation events. Minor surface waters within the Antelope Valley Hydrologic Unit, when present, have the following beneficial uses: municipal and domestic; agricultural supply; groundwater recharge; freshwater habitat; water contact and noncontact water recreation; commercial and sport fishing; warm freshwater habitat; wildlife habitat; rare, threatened, or endangered species; and spawning (LRWQCB, 1995).

Man-made surface water features in the area are water storage ponds associated with water and/or wastewater treatment plants as well as recharge facilities. The California Aqueduct is part of the State Water Project (SWP), which is the nation's largest state-built water and power development and conveyance system that includes pumping and power plants, reservoirs, lakes, storage tanks, canals, tunnels, and pipelines that capture, store, and convey water to 29 contract water agencies (MWA, 2019).



Path: U:\GIS\GIS\Projects\209xxx\209595\209595.23_Edwards_ARF\03_mxds_projects\EIR\Fig3.16-1_Watershed.mxd, dkaneshiro 1/8/2020

Figure 3.16-1: ANTELOPE VALLEY WATERSHED AND BISSELL HILLS SUBWATERSHED

Onsite Hydrology and Drainage

The project is located within the Bissell Hills Subwatershed of the Antelope Valley Watershed (Figure 3.16-1), which lacks defined natural and improved channels and is subject to unpredictable sheet flow. Surface water flows are carried by small ephemeral streams. The contributing surface flow to the area is primarily precipitation runoff from surrounding higher elevations. The Preliminary Flood Hazard Assessment determined the watershed area that contributes to the project site is just over 33,920 acres in size, with a peak runoff for the 2-year and 100-year storm events to be nearly 260 and 6,200 cubic feet per second (cfs), respectively (Appendix B16). These estimations were considered high but not unreasonable given the size of the watershed, the infiltration characteristics of onsite soils, and the rainfall rate and distribution of the 2- and 100-year storms.

The project site at its maximum size (4,000 acres) is gently sloping to the east and elevations range from 2,440 feet above mean sea level (amsl) to 2,565 feet amsl. When rain events of sufficient intensity and/or duration to generate surface runoff occur, flow enters the project site from three directions: north, west, and south from the Bissell Hills, with the bulk of the flow passing through seven points of inflow along the north and west boundaries (Appendix B16). Analysis of flow patterns using a two-dimensional model shows that at high flowrates, flow crossing the northern and western boundaries of the site will be both overland and channelized (Appendix B16). The site generally slopes from west to east, and acts as a collection zone, with a singular watershed outlet located on the eastern edge of the site (Appendix B16). The analysis indicates that flow across the site in the 2-year event would be very shallow (< 3 inches), have very low velocity (< 0.25 feet per second), and largely confined to defined drainages (Appendix B16). The flow during a 100-year rain event would be somewhat deeper (as much as 3 feet deep) and faster flowing (3 feet per second) along the defined channels, but would result in ponding over a substantial portion of the site (up to 35 percent). The area of ponding outside defined channels would generally not be greater than 6 inches in depth (Appendix B16).

Groundwater Resources

This project is located in eastern Kern County at the southern end of the Fremont Valley Groundwater Basin (FVGB). As defined by DWR (Basin No. 6–46), the FVGB covers an estimated 2,370,000 acres and is bounded to the south and southeast by the Bissell Hills and the Antelope Valley Groundwater Basin; to the east by crystalline rocks of Red Mountain, the Rand Mountains, Castle Butte, and the Rosamond Hills; and to the west and north by the Sierra Nevada Mountains, the Tehachapi Mountains, and the El Paso Mountains (DWR, 2004). The boundary between the FVGB and the Antelope Valley Groundwater Basin occurs along a groundwater divide approximated by a line connecting the mouth of Oak Creek through Middle Butte to the exposed basement rock near Gem Hill and to the southeast of California City.

The U.S. Geological Survey (USGS) has divided the FVGB into six subunits that are generally defined by groundwater flow patterns, recharge characteristics, geographic location, and controlling geologic structures such as faults or intruding bedrock features (USGS, 1967). Various strands of the Garlock Fault Zone (which includes the El Paso Fault) and the Muroc Fault both represent partial barriers to groundwater flow and generally define the boundaries between the

Chaffee, California City, Oak Creek, and Koehn Subunits.[1] The boundary between the Chaffee and Gloster Subunits is defined by consolidated rock of the northern part of the Bissell Hills and the general east–west line of scattered hills trending through Elephant Butte westward to the Garlock Fault Zone. Based on low population density, negative growth projections, low numbers of private and public supply wells, and the lack of irrigated agriculture within the FVGB, it is designated as a low-priority basin by DWR (DWR, 2004). The project is within the Gloster Subunit of the FVBG.

Regional Groundwater Overdraft Conditions and Recharge Activities

Natural recharge of the basin includes percolation of ephemeral streams that flow in from the Sierra Nevada. The general groundwater flow direction is toward Koehn Lake at the center of the valley, with no appreciable quantity of groundwater flowing out of the basin (DWR, 2004). Within the project area, the general pattern of groundwater flow is in a northerly to northeasterly direction (USGS, 1967). DWR notes historical groundwater level declines in some parts of the basin and stabilization of groundwater levels in others. The total storage capacity of the basin is calculated to be 4,800,000 acre-feet (AF), although the current amount of groundwater in storage is unknown (DWR, 2004). DWR has not identified the basin as being in, or projected to be in, an overdraft condition, and there is no adjudication applicable to the FVGB (DWR, 2016).

The project overlies Quaternary alluvium, which is the most important water-bearing material in the basin. Site-specific information on the thickness of alluvium underlying the project site is not known with confidence and varies geographically. Basin-wide, however, alluvial deposits are thought to be locally in excess of 1,000 feet thick, thinning toward the bed of Koehn Lake, where alluvium is interbedded with lacustrine deposits that result in locally confined conditions. Average well yield (for municipal and agricultural wells) reported by DWR within the basin is approximately 530 gallons per minute (gpm) with a maximum yield of 2,580 gpm (DWR, 2004). Historically, agricultural activities in the FVGB peaked in the 1970s, with estimated groundwater extractions reaching up to approximately 60,000 AFY in 1976. Agricultural activities significantly decreased thereafter; and as of 2010, only 1 percent of lands cultivated in 1976 were still in production. In 2017, alfalfa and pistachios generated a demand of approximately 410 AF (Woodard & Curran, 2018).

USGS and DWR have measured groundwater levels from three wells on the site, two of which are still actively monitored for groundwater levels. Water level records for these wells date back to the late 1960s. The depth to groundwater for all three wells has historically varied between 35 and 75 feet below the ground surface (bgs), and show a declining long-term trend (USGS, 2018). Groundwater levels measured in March 2010 from a well within the project boundary is 49.3 feet bgs (for DWR Well No. 349444N1181360W001) (DWR, 2019). Groundwater quality within the basin is typically sodium bicarbonate or sodium sulfate in character. Total dissolved solids content in the basin averages 300mg/L (Appendix B20), which

[1] Various descriptions and depictions of the local groundwater basin area, specifically within the Antelope Valley Integrated Regional Water Management Plan, indicate that the Gloster Subunit is part of the Antelope Valley Groundwater Basin. Further research, however, shows that the project site is not located within the specific jurisdictional boundary that has been legally established for the Antelope Valley Groundwater Basin adjudication and that the site is located in the FVGB according to DWR Bulletin 118, the best available and authoritative source of basin boundaries in California.

meets California drinking water standards (SWRCB, 2010). High levels of boron, nitrates, and arsenic have been observed within the basin (Appendix B20).

Flood Hazards

Portions of the proposed gen-tie route options would pass through Flood Zone A. Zone A is defined by FEMA as an area with a 1 percent chance of annual flooding, or a 100-year flood zone (FEMA, 2014). The proposed solar facility would be located in Flood Zone D, defined as an area with possible but undetermined flood hazards since the area has not been analyzed for flood hazards by FEMA. Some areas immediately adjacent to the proposed solar facility location have a Flood Zone A designation. The preliminary Flood Hazard Assessment, included as Appendix B16, determined the boundaries of the 100-year flood zone onsite in accordance with the Kern County Hydrology Manuals. A substantial portion of the proposed solar facility site is within a flood zone that continues onto the site from the adjacent FEMA-mapped 100-year flood zones. Thus, although the area of impact has not been officially mapped by FEMA, Appendix B16 shows that areas within the project site would likely be located in a 100-year flood zone.

3.16.2 Environmental Consequences

This section of the EIS/EIR describes the environmental consequences related to hydrology and water quality. It describes the methods used to determine the effects of the proposed project and lists the thresholds used to conclude whether an effect would be significant.

3.16.2.1 Assessment Methods/Methodology

The analysis of potential impacts of the Proposed Action and alternatives focuses on possible impacts to water quality, groundwater levels, drainage, and flooding patterns. Impacts are identified and evaluated based on relevant lead agency standards, policies, and guidelines. Information regarding hydrology and water quality was reviewed for this analysis, including the aforementioned Hydrology and Water Quality Assessment (Appendix B20) and the Preliminary Flood Hazard Assessment (Appendix B16). The analysis presents the evaluation of the potential for the proposed project to create risks or cause direct or indirect impacts related to its hydrological setting. This analysis was conducted by examining preliminary hydrology data, Kern County Planning documents, geographical information systems, and publically available natural resource maps.

3.16.2.2 Determination of Impacts/Thresholds of Significance

For this analysis, an environmental impact was significant if it would result in any of the effects listed below, which are based on common NEPA standards, CEQA Guidelines Appendix G (14 CCR 15000 et seq.), and standards of professional practice.

NEPA

The following criteria were used to determine the severity and intensity of impacts under NEPA:

1. Impacts to water resources may be both beneficial and adverse. A significant short-term adverse effect may exist even if the lead agencies believe that on balance the effect will be beneficial.

2. The degree to which the action may adversely affect surface water quality or the existing drainage pattern of the site and/or downstream areas.
3. The degree to which the action may adversely affect groundwater quality or the existing infiltration on the site.
4. Whether the action would place structures or housing within a flood zone.
5. Unique characteristics of the geographic area such as proximity to water bodies with beneficial uses, including wetlands, wild and scenic rivers, and ecologically critical areas, or proximity to water bodies with water quality impairments.
6. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
7. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

CEQA Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in Appendix G of the CEQA *Guidelines*, to determine if a project could potentially have a significant adverse effect regarding hydrology and water quality.

A project would have a significant adverse effect on hydrology and water quality if it would:

- Violate water quality standards or waste discharge requirements
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level such that the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Otherwise substantially degrade water quality
- Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows

- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam
- Contribute to inundation by seiche, tsunami, or mudflow

The County determined in the Notice of Preparation/Initial Study (NOP/IS) (see Appendix A1) that the proposed project would result in no impact to the environmental issue areas listed below. These issue areas were therefore scoped out of requiring further review in this EIS/EIR.

- Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam
- Contribute to inundation by seiche, tsunami, or mudflow

Please refer to Appendix A1 of this EIS/EIR for a copy of the NOP/IS and additional information regarding these issue areas.

3.16.3 Analysis of Environmental Effects

3.16.3.1 Alternative A: Up to 4,000-Acre EUL (Preferred Alternative)

NEPA: Environmental Impacts

Existing and Adjacent Water Bodies Onsite

The drainages on the project site are ephemeral washes and do not have any existing water quality impairments (SWRCB, 2012). Rogers Dry Lake is downstream from the project area and does have beneficial uses; however, under prevailing conditions, water onsite likely evaporates or infiltrates prior to establishing a hydrological connection to Rogers Dry Lake. Only under extreme flood scenarios would runoff from the site and surrounding areas reach Rogers Dry Lake east of the project site.

Construction and Decommissioning

Surface Water Quality and Drainage Patterns

Construction and decommissioning of the project could impact water quality through erosion and sedimentation resulting directly from earthwork or an alteration in drainage pattern caused by earthwork. Construction and decommissioning would also require the use of chemicals that could be harmful if improperly managed and inadvertently released to surface waters or (indirectly) to groundwater. The project site is relatively flat, indicating low erosion potential. In addition, the developer plans to implement the “mow and roll” technique of site preparation, which allows for a significant reduction in the extent of rough grading and related dust control needs. Instead of conducting vegetation clearing and mass grading across the whole site, limited grading necessary to establish construction staging areas; site access roads; inverter pads; utility trenches; building pads for on-base substation, switchyards and the operations and maintenance (O&M) building; and discreet areas where leveling may be needed for pile installation would be conducted. In order to access locations for vibratory piles placed for solar racking, vegetation would be mowed, leaving roots intact and aboveground vegetation rolled over only to the extent necessary for construction

equipment to access the construction site. In addition to maintaining natural vegetation where possible, the developer also would employ dust suppressants and palliatives when necessary within inactive areas of the construction site thus reducing the amount of water spraying needed. Potential impacts from construction-related activities would generally be short term and of limited duration given the 2-year construction period and the rarity of significant rainfall on the site. Dust suppressants can be used to help mitigate wind erosion blowing dust during high wind speed events.

In addition to construction practices that minimize the potential for substantial soil erosion, implementation of a SWPPP would be required during both construction and decommissioning per Mitigation Measure MM 3.16-1a for the solar facility portion of the project site and Mitigation Measure MM 3.16-1b for the gen-tie portion of the project site. This would include erosion and sediment control BMPs, such as vegetation preservation and sandbags, which should help prevent the occurrence of erosion or siltation onsite. Non-stormwater and post-construction BMPs would also be implemented to prevent discharge of construction-related pollutants (sediment, oil, etc.) that could contaminate nearby drainages. The developer would also be required to comply with the Kern County Grading Ordinance and would prepare a SWPPP that includes erosion control measures, the location of which would be required to be displayed in the grading plans per Mitigation Measure MM 3.16-3a for the solar facility portion of the project site and Mitigation Measure MM 3.16-3b for the gen-tie portion of the site. Reduction of erosion would avoid degradation of water quality..

With implementation of Mitigation Measures MM 3.16-1a, MM 3.16-1b, MM 3.16-3a, and MM 3.16-3b, the impact of project construction and decommissioning on water quality would be minor and less than significant.

Groundwater Quality and Infiltration

The project does not propose the use of onsite groundwater wells for construction, and therefore, there would be no localized impacts to the underlying groundwater table in the form of decreased groundwater levels or a decrease in the amount of groundwater stored. Furthermore, the project site would not include elements that substantially interfere with groundwater recharge because the impervious surfaces proposed are limited to operation and maintenance buildings, various concrete pads for inverters and/or substation/switchyard components, and solar panel surfaces (which result in a dripline). The effect of these components is highly localized, and would slightly change the location where water infiltrates into the ground, but would not prevent groundwater recharge at times when enough rain falls for recharge to be initiated. The project site is not in an area that is naturally conducive to significant recharge, due to the fine-grained nature of soils (i.e., hydrologic group C and D), and because the little rain that does fall is primarily lost to evaporation or transpiration (Appendix B16).

With respect to groundwater quality, the only potential impact would be from pollutants that may be dissolved in water and seep into the underlying groundwater table. This is limited to fuels and/or solvents, because suspended solids, such as sediment, get filtered out by soils before reaching the underlying groundwater table. The measures discussed above to reduce sources of pollutants to surface water are equally effective at avoiding or substantially reducing the potential for such pollutants to reach the groundwater table. The depth to groundwater onsite exceeds 50 feet bgs,

therefore construction excavations for foundations and utilities would not intercept the groundwater table. The project would have no appreciable impact on groundwater quality.

Water supply for the project, to the extent it comes from groundwater, could have a minor, but less-than-significant effect on groundwater resources. Water would be trucked to the project site to provide a maximum of 200 AFY for the 2-year construction period, for a total of 400 AF for construction (Dudek, 2018). It is expected that the same source of water would be used for operation activities (that would require up to 30 AFY) and decommissioning activities (that would require 200 AFY) principally for dust control and sanitation. The trucked water would be provided by the Mojave Public Utility District (PUD), which obtains its water supply from the Fremont Valley groundwater basin. The basin is not currently overdrafted, and the Mojave PUD has provided will-serve letters for a construction demand of up to 200 AFY and operation water demands. When decommissioning occurs, the project would obtain a will-serve letter from a water purveyor. To the extent available, tertiary treated water would be used on the project site for non-potable uses, thereby reducing potential competition with other water users for high-demand potable water supplies (see Section 3.10, *Infrastructure*, for more details on water supply). During construction and decommissioning, equipment laid down would not substantially reduce the amount of pervious surfaces onsite such that it would interfere with groundwater recharge.

As discussed previously in Section 3.16.1, *Affected Environment*, there are at least two groundwater wells on the project site and there may be additional wells that have yet to be identified. Should an abandoned water well be uncovered during construction, the Kern County Public Health Department (gen-tie) and the Air Force (solar facility) would be consulted regarding appropriate well destruction procedures and permitting, thereby avoiding impacts to groundwater during the process. Minimum standard statewide well destruction procedures, as outlined in DWR Bulletin 74, require that well holes be filled with appropriate sealing materials so that surface pollutants or poor quality perched groundwater does not migrate into underlying groundwater aquifers.

Construction and decommissioning of the project would have no adverse impacts related to groundwater quality and/or infiltration.

Structures Within a Flood Zone

For the purpose of this analysis, structures located within a flood zone are only considered to have a substantial impact if their presence within the floodplain increases the probability, depth/extent, or severity of flood hazards for people, property, or the environment relative to pre-existing conditions. The project would not involve any large-scale changes in topography through grading or placement of fill, and would not substantially increase the pre-existing rate or volume of runoff given that impervious surfaces would consist of small and disconnected concrete pads and foundations. Access roads would be unpaved and consist of compacted surfaces of native soil and/or gravel. The cumulative size of impervious surfaces would be minor relative to the total size of the project site. It is not anticipated that access roads would cross any defined drainages. However, if avoidance is not feasible, in locations where access roads must cross defined drainage channels, the crossings would consist of low-water crossings and would not result in the redirection or impedance of flood flows; therefore, the project would not affect the beneficial uses identified in the Water Quality Control Plan for the ephemeral drainages on site. The gen-tie alignments

would have no impact on flooding because power poles, even where located within a FEMA flood hazard zone, are too small to substantially affect the extent, volume or rate of flood waters, and would not otherwise impact the health and safety of people or newly place offsite properties at addition risk of flooding.

A substantial portion of the proposed solar facility site is within a flood zone that likely continues onto the site from the adjacent (offsite) FEMA-mapped 100-year flood zones. Although the area of impact has not been mapped by FEMA, the Preliminary Flood Hazard Assessment (AppendixB16) shows that a majority of the project area would be within a 100-year flood zone, with approximately 35 percent of the site covered in greater than 6 inches of water (Appendix B16). The character of flooding is generally expected to be shallow and slow-moving, with the exception of the defined drainage channels near the northeastern boundary of the site (Appendix B16). The bulk of the project consisting of solar arrays would likely not have substantial impacts on the depth or extent of flooding because the steel pile foundations for the solar racking system would be spread out and small in diameter. The photovoltaic panels, at their lowest point, would likely be approximately 30 inches above the ground surface. In order to maintain a 1-foot freeboard above the 100-year flood elevations, the 100-year flood depth would need to be 28 inches or less. Based on the preliminary flood hazard assessment, this occurs within a zone that occupies a small narrow part of the eastern fifth of the project site. Impacts of the project on pre-existing flood hazards would be to the project site itself, and would thus represent an inspection and maintenance issue for the project developer rather than a significant health and safety risk for the public or offsite properties.

The primary concern with respect to flooding, therefore, is the potential for flooding to inundate substations, switchyards, and/or O&M areas, which could have the potential to release debris and/or hazardous materials to floodwaters and eventually downstream, as well as the potential for localized high-velocity floodwaters to scour steel pile foundations. The potential impact is therefore on water quality rather than public safety. It is therefore important to ensure the final design of the project considers both the depth and velocity of floodwaters, so sensitive areas such as material storage areas are not inundated and solar panel racking systems are not compromised. Because the assessment of onsite flood hazards is preliminary, mitigation consists of preparing a Final Flood Hazard Assessment in accordance with Mitigation Measure MM 3.16-2a for the solar facility portion of the project site and Mitigation Measure MM 3.16-2b for the gen-tie portion of the site, and preparing a Grading Plan that considers flood protection standards in accordance with Mitigation Measures MM 3.16-3a and MM 3.16-3b. The project facilities and associated construction staging areas would be sited and designed in accordance with this updated and accurate flood zone information. Potential impacts related to flood zones would be minimal.

With implementation of Mitigation Measures 3.16-2a, MM 3.16-2b, MM 3.16-3a, and MM 3.16-3b, the impact of project construction, operation and maintenance, and decommissioning with respect to flood hazards would be minor and less than significant.

Operation and Maintenance

Surface Water Quality and Drainage Patterns

Project operation would involve the use and storage of hazardous chemicals onsite that have the potential to contaminate surface runoff if poorly managed. These materials would include oils, lubricants, paints, solvents, degreasers and other cleaners, and transformer mineral oil. The developer would be required to develop a Hazardous Materials Business Plan per Mitigation Measure MM 3.9-1a for the solar facility portion of the project site and Mitigation Measure MM 3.9-1b for the gen-tie portion of the site (see Section 3.9, *Hazardous Materials and Safety*, for more details), which would delineate hazardous material and hazardous waste storage areas and describe procedures for handling and disposing of hazardous materials used during operation.

Mitigation Measure MM 3.16-2a for the solar facility portion of the project site and Mitigation Measure MM 3.9-2b for the gen-tie portion of the site, would require the preparation of a Final Flood Hazard Assessment to confirm with greater certainty the existing flood hazards on site and a Final Hydrology Report that would include the final design of any necessary drainage mitigation features, such as retention basins, that would capture any substantial predicted increase in runoff. According to Appendix B20, the final stormwater retention volume is anticipated to be between 30–50 acre-feet, based on County standards for analyzing pre- versus post-construction runoff conditions. These features would be designed in accordance with the County Hydrology Manual and Development Standards. As part of the SWPPP requirements (Mitigation Measures MM 3.16-1a and MM 3.16-1b), the project would be required to implement post-construction BMPs to stabilize any disturbed soils prior to the beginning of project operation. Minimization of disturbance to vegetation would be included as a BMP in the SWPPPs implemented during project construction and decommissioning, thereby maintaining topsoil stability and preventing siltation of runoff. Therefore, causation of and damage from flooding would be prevented, and the potential degradation of water quality from siltation would be reduced. Mitigation Measure MM 3.16-3a for the solar facility portion of the project site and MM 3.16-3b for the gen-tie portion of the project site, would require the preparation of a Grading Plan including nonstructural BMPs and drainage mitigation features (post-construction structural BMPs) aimed at detaining and filtering out pollutants onsite during project operation.

Operation could also result in water quality degradation through the encroachment of septic system waste into surface water should septic systems be improperly located, designed, or maintained. The developer would implement Mitigation Measure MM 3.7-2a for the solar facility portion of the project site, which would require compliance with the County septic system standards. This mitigation measure includes percolation testing demonstrating soil suitability for filtering effluent and submittal of septic plans to the County prior to construction of the septic systems. No adverse impacts to water quality are expected.

During operation, the presence of the project structures, including impervious surfaces that would result from construction of maintenance buildings, various concrete pads for inverters and/or substation/switchyard components, and solar panel surfaces (which result in a dripline), would have minor and localized effects on the site's existing drainage pattern, which could lead to erosion, siltation or flooding onsite or offsite. Up to 4,000 acres of the project site would be developed. Development would mainly consist of individual panels mounted on poles and a generation tie line.

Thus, with the exception of the service buildings and warehouses, the majority of the project site would continue to allow stormwater percolation. Further, the project site is relatively flat, indicating a low existing erosion potential and low flood velocity. Mitigation Measures MM 3.16-2a and MM 3.16-2b would further refine mapping of flood zones onsite so project facilities can be designed to avoid flood zones to the maximum extent possible, in compliance with the requirements of the Kern County Floodplain Management Ordinance. Therefore, the project would avoid impacts related to existing flood zones and drainages. Additionally, the developer would prepare a grading plan that would detail the implementation of drainage devices and erosion control features designed to minimize excess runoff and reduce erosion and sedimentation (Mitigation Measures MM 3.16-3a and MM 3.16-3b). Furthermore, the site engineering and design plans for the proposed project would be required to comply with the Hydrology Manual and Development Standards, which would help reduce flood flows onsite. With implementation of mitigation measures, operation of the project would comply with all General Plan and Specific Plan requirements pertaining to surface water quality and drainage patterns. No adverse effects related to erosion, siltation, or flooding are expected.

Groundwater Quality and Infiltration

For the same reasons discussed above under "construction and decommissioning," the project would not have a significant impact with respect to groundwater quality and infiltration. Should operation and maintenance of the project rely on onsite groundwater, it would be from the FVGB, which is designated by DWR as a low-priority basin, based on low population density, negative growth projections, low numbers of private and public supply wells, and the lack of irrigated agriculture. The use of up to 30 AFY for operation is a conservative estimate, and given the lack of nearby groundwater users, would not substantially affect the rate of production of pre-existing wells. The anticipated O&M demand of 30 AFY translates to an average well production of 18.5 gallons per minute, whereas typical production wells in the region can pump in the hundreds of gallons per minute. Onsite groundwater would only be required on a periodic basis during panel washing and/or to fill storage tanks serving the O&M area, and therefore any cone of depression that develops from using an onsite well would be highly localized and minor in magnitude and would recover shortly after pumping ceases. Given the groundwater table in the area ranges between 50 and 66 feet bgs, and that typical depths of wells generally exceed 200 feet, a temporary groundwater elevation change, likely on the order of a few feet, would not be a significant impact to the FVGB, which has a groundwater in storage volume in the millions of acre-feet.

Structures Within a Flood Zone

Although the project site is in an area of an undetermined flood zone (Zone D), mapped 100-year flood zones (Zone A) adjacent to the project site and a preliminary flood hazard assessment (Appendix B16) indicates that the majority of the project site is likely within a 100-year flood zone. For the reasons discussed above under "construction and decommissioning," with implementation of Mitigation Measures MM 3.16-2a, MM 3.16-2b, MM 3.16-3a, and 3.16-3b, the impact of project construction, operation and maintenance, and decommissioning with respect to flood hazards would be minor and less than significant.

CEQA: Impact Significance Determination

Impact 3.16-1: The project could violate water quality standards or waste discharge requirements.

Construction activities including grading and excavation, and decommissioning activities such as demolition and backfilling would disturb and expose soils, which could result in erosion and sedimentation of stormwater. Further, construction or decommissioning activities could result in the accidental release of chemicals and/or hazardous materials that could mix with stormwater and result in water quality degradation. Materials that may be used onsite and could degrade water quality include diesel fuel, gasoline, lubricant oils and grease, hydraulic fluid, antifreeze, transmission fluid, cement slurry, and other fluids used by construction and maintenance vehicles and equipment.

The project site is relatively flat in its existing condition. The developer plans to implement the "mow and roll" technique of site preparation, which allows for a significant reduction in the extent of rough grading. Instead of conducting vegetation clearing and mass grading across the whole site, only the limited grading necessary to establish construction staging areas; site access roads; inverter pads; utility trenches; and building pads for on-base substation, switchyards and the O&M building; and discreet areas where leveling may be needed for pile installation would be conducted. In order to access locations for vibratory piles placed for solar racking, vegetation would be mowed, leaving root wads intact and aboveground vegetation rolled over only to the extent necessary for construction equipment to access the construction site. Therefore, it has a modest potential for runoff, reducing its ability to transport pollutants generated onsite to other water bodies. Drainage mitigation, as determined in the hydrology and water quality assessment (Appendix B20) would be installed to capture the predicted increase in runoff resulting from the proposed project and reduce erosion and consequential siltation and degradation of water quality. It is anticipated that a retention basin with a volume of between 30 and 50 acre-feet would be required, which is based on County standards for analyzing pre- vs. post-construction runoff.

During construction and decommissioning, the developer would be required to adhere to the requirements of the Kern County Grading Ordinance that would reduce erosion through slope control and the implementation of temporary erosion control devices where necessary. Although compliance with the Construction General Permit is not technically required since the project site would not drain to waters of the U.S., the Kern County Engineering, Surveying, and Permit Services Department requires implementation of a SWPPP that would include erosion control, sediment control, non-stormwater and post-construction BMPs to be implemented to prevent pollutants (sediment, oil, etc.) from contaminating nearby drainages (Mitigation Measures MM 3.16-1a and MM 3.16-1b). The developer would also implement measures to minimize erosion control and sedimentation during construction in accordance with the Kern County Grading Ordinance.

Similar to project construction, chemicals used onsite during operation for facility maintenance including oils, lubricants, paints, solvents, degreasers and other cleaners, and transformer mineral oil, could mix with stormwater and degrade water quality. As described in Section 3.9, *Hazards and Materials and Safety*, Mitigation Measure MM 3.9-1a for the solar facility portion of the project

and Mitigation Measure MM 3.9-1b for the gen-tie portion of the project, would require the developer to develop a Hazardous Materials Business Plan that would delineate hazardous material and hazardous waste storage areas; describe proper handling, storage, transport, and disposal techniques; describe methods to be used to avoid spills and minimize impacts in the event of a spill; describe procedures for handling and disposing of unanticipated hazardous materials encountered during operation, and establish public and agency notification procedures for spills and other emergencies, including fires. The developer would provide the Hazardous Materials Business Plan to all contractors working on the project and would ensure that one copy is available at the project site at all times.

Project facilities would be designed to avoid the placement of project infrastructure and materials in the path of flood flows where possible, thereby reducing the potential for stormwater to come into contact with pollutants. The developer would be required to prepare a Final Flood Hazard Assessment to determine potential flood hazards onsite and mitigate these hazards as described in Mitigation Measure MM 3.16-3a for the solar facility portion of the project and Mitigation Measure MM 3.16-3b for the gen-tie portion of the project. The avoidance of flood flows would reduce the potential introduction of pollutants associated with project operation (as identified above) into stormwater. Per Mitigation Measure MM 3.16-4a for the solar facility portion of the project site and Mitigation Measure MM 3.16-4b for the gen-tie portion of the site, the developer would be required to prepare and submit a Grading Plan to the Kern County Engineering, Surveying, and Permit Services Department, which would include drainage devices and erosion control measures intended to minimize runoff and prevent erosion and sedimentation, thereby preventing water quality impacts.

Based on the discussion above, construction and operation of the project are not expected to violate the Water Quality Control Plan water quality objectives and standards that apply to the ephemeral washes onsite such that beneficial uses of the washes are affected. Therefore, impacts to water quality would be less than significant with incorporation of mitigation.

Mitigation Measures

Implement Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.16-1a through MM 3.16-4a, and MM 3.16-1b through MM 3.16-4b (see Sections 3.9.5 and 3.16.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

Impact 3.16-2: The project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

A maximum of approximately 200 AFY of water per year would be required during the 2-year construction period for concrete manufacturing, dust control, and sanitation uses. During operation, the proposed project would require approximately 30 AFY of water for panel washing, dust mitigation, landscaping, and sanitation purposes. Water would be trucked in to the site for construction, operation, and decommissioning. During operation, water would be trucked in from the Mojave Public Utilities District, which obtains water from the Fremont Valley Groundwater

Basin, or an onsite well within the Fremont Valley Groundwater Basin would be dug. The Mojave PUD has ensured sufficient water is available to provide the proposed project's water supply during construction and operation via will-serve letters.

In Accordance with SB610, a water supply assessment (WSA) has been completed to demonstrate the sufficiency of water supply necessary to support the project over a 20-year time horizon (Appendix B19). The analysis found that the Mojave PUD has sufficient access to water supply through its connection to AVEK, and/or its non-potable Well 30 to supply the project even in single-dry and multiple-dry year scenarios (Appendix B19). AVEK has the third-largest allotment of the 29 State Water Project contractors, after the Metropolitan Water District of Southern California and the Kern County Water Agency, and also has groundwater banking reserves to supplement imported water deliveries. In addition, Mojave PUD's Well 30 provides up to 350 gpm of non-potable water and is located 4.5 miles north of the proposed project's northern border. Groundwater supplies in the FVGB are adequate to supply the project over a 20-year period. The FVGB is not currently in overdraft and recharge estimates of 2.5 percent of average rainfall into the upper aquifer are sufficient to meet groundwater demand. Extraction of groundwater from the FVGB is currently 4,095 AFY, with Mojave PUD extracting 467 AFY, below the high pumping volume of 32,000 acre-feet in the 1960s and 1970s. Therefore, the project would not substantially deplete groundwater supplies.

Although the project would require some excavation and installation of structures below ground surface, none of these subsurface structures would be expected to come into contact with or affect existing groundwater levels. With the installation of compacted roads, concrete pads and warehouse buildings, the project would increase the amount of impervious surfaces onsite during its operation; however, the vast amount of undeveloped land surrounding the project site would provide sufficient pervious surfaces for continued groundwater recharge in the area and rates of groundwater recharge are not expected to be altered. Historical drainage patterns would be maintained during project operation to the maximum extent feasible through the avoidance of existing flood zones. The project would be designed to avoid impacts to flood zones to the maximum extent possible, which would allow the passage of surface water through the project site at a natural flow rate (Appendix B20). The majority of the project site would have embedded solar panel foundation poles that would have a negligible effect on existing drainage and infiltration. Therefore, the project would not substantially interfere with groundwater recharge .

The proposed project would be required to comply with the GWMP prepared for the FVGB, which has the capacity to be revised into a GSP per SGMA requirements in the future if necessary. The proposed project would not be a part of potential agricultural growth that could contribute to FVGB overdraft beginning in 2030. Further, the project would comply with the GWMP management strategy of preventing the discharge of pollutants into the environment. As identified in impact (a) above, the proposed project would implement a SWPPP during project construction to reduce potential mixing of stormwater with pollutants onsite as well as a Hazardous Materials Business Plan during both construction and operation (per Measure MM 3.9-1a and Mitigation Measure MM 3.9-1b) that would reduce the potential uncontrolled release of hazardous materials into the environment. Per Mitigation Measure MM 3.16-3a and 3.16-3b, the project would be designed to avoid flood flows, thereby reducing the potential for pollutants such as maintenance vehicle fuel to

come into contact with stormwater during operation. Further, the project would comply with the GWMP management strategy of protecting areas suitable for groundwater recharge, as the project would have a negligible effect on groundwater recharge within the vicinity of the project site. Therefore, the project would not impede sustainable management of the groundwater basin.

For the same reasons discussed in the NEPA analysis, construction and decommissioning of the project would have a less-than-significant impact related to depleting groundwater supplies or interfering substantially with groundwater recharge .

Mitigation Measures

None Required.

Level of Significance

Impacts would be less than significant.

Impact 3.16-3: The project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation and/or flooding onsite or off site.

The project site contains ephemeral streams that carry surface runoff flows. Although the project site is relatively flat, grading and excavation during construction and decommissioning would have a minor and temporary effect on the ground surface topography and drainage patterns, potentially concentrating and/or increasing runoff flows and that could result in erosion, sedimentation and/or flooding. Introduction of impervious surfaces onsite would be small in any one area and disconnected across the project site, but could also increase runoff onsite that could erode sediment and cause sedimentation or flooding.

The proposed project would implement a SWPPP during construction and decommissioning that includes erosion and sediment control BMPs designed to prevent erosion or siltation onsite (Mitigation Measures MM 3.16-1a and MM 3.16-1b). Further, the proposed facilities and associated construction and demolition activities would avoid flood paths to the maximum extent possible. Flood paths would be further refined through preparation of a final flood hazard assessment (Mitigation Measures MM 3.16-2a and MM 3.16-2b) and grading plan (Mitigation Measures MM 3.16-4a and MM 3.16-4b) prepared in accordance with the County Grading Code. Although solar panel foundations and generation tie lines would cover limited ground surface areas, the grading plan would include any drainage devices deemed necessary to accommodate anticipated increases in runoff caused by an increase in impervious surfaces onsite. The proposed project would comply with the County Hydrology Manual and Development Standards. Therefore, the proposed project would not result in the alteration of drainage patterns onsite so as to result in erosion or siltation and/or flooding onsite or offsite.

Mitigation Measures

Implement Mitigation Measures MM 3.16-1a through MM 3.16-4a and Mitigation Measures MM 3.16-1b through MM 3.16-4b (see Section 3.16.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

Impact 3.16-4: The project could create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

There is no engineered stormwater drainage system whose capacity could be exceeded by project construction, operation, and/or decommissioning. The project drains to desert washes which have no capacity limitations (i.e., pipes, culverts, and/or bridges). Following implementation, much of the project site would remain pervious, allowing infiltration of the majority of runoff from storm events into the soil. According to the hydrologic analyses in the conceptual drainage report, the project would not substantially affect existing flow patterns onsite. The project would include all necessary stormwater management facilities, as confirmed by the final drainage report required by Mitigation Measures MM 3.16-4a and MM 3.16-5a for the solar facility portion of the project as well as Mitigation Measures MM 3.16-4b and MM 3.16-5b for the gen-tie portion of the site. As discussed above, the project would be required to implement a SWPPP to control erosion and protect water quality of stormwater runoff as part of Mitigation Measure MM 3.16-1a for the solar facility portion of the project and Mitigation Measure MM 3.16-1b for the gen-tie portion of the project. Mitigation Measures MM 3.16-4a and MM 3.16-4b would help prevent erosion and sedimentation from occurring onsite and polluting receiving waters. Therefore, no stormwater drainage system capacities would be exceeded by the proposed project, and the project would not contribute to additional polluted runoff.

Mitigation Measures

Implement Mitigation Measures MM 3.16-1a, MM 3.16-1b, MM 3.16-4a, MM 3.16-4b, MM 3.16-5a, and MM 3.16-5b (see Section 3.16.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

Impact 3.16-5: The project could otherwise substantially degrade water quality.

As stated under Impact 3.16-1, compliance with Mitigation Measure MM 3.16-1a for the solar facility portion of the project and Mitigation Measure MM 3.16-1b for the gen-tie portion of the project, requires BMPs to be implemented to protect water quality during construction and decommissioning of all facilities. A Hazardous Materials Business Plan would also be implemented for both the solar facility portion of the project and the gen-tie portion of the project, that specifies appropriate handling and accidental spill cleanup procedures for hazardous materials (Mitigation Measures MM 3.9-1a and MM 3.9-1b). Preparation of a Final Flood Hazard Assessment (Mitigation Measures MM 3.16-2a and MM 3.16-2b) and a Grading Plan (Mitigation Measures MM 3.16-3a and MM 3.16-3b) to Kern County and the Air Force would avoid an increase in flooding that could cause erosion and/or sedimentation.

The project site would use septic systems to treat waste produced onsite during operation. Septic systems have the potential to overflow as a result of irregular maintenance or improper installation.

This could result in presence of untreated waste from the septic tank on or near the ground surface; should runoff mix with this untreated waste, water quality degradation could result. However, the septic systems would comply with County septic system requirements in accordance with Mitigation Measure MM 3.7-2a for the solar facility portion of the site, which include lot sizing and setbacks from any existing wells, groundwater and surface water onsite to avoid water quality degradation. The developer would also be required to submit a copy of soil reports including percolation testing that demonstrate the feasibility of septic system installation on the project site, septic plans, and a statement from the engineer saying all plans would comply with septic regulations to the Kern County Environmental Health Services Department for review prior to issuance of a building permit. Therefore, impacts with regard to the further degradation of water quality would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 3.16-1a through MM 3.16-4a, MM 3.16-1b through MM 3.16-4b, and MM 3.7-2a (see Sections 3.7.5 and 3.16.5 for mitigation measures).

Level of Significance After Mitigation

Impacts would be less than significant.

Impact 3.16-6: The project could place within a 100-year flood hazard area structures that would impede or redirect flood flows.

The proposed solar facility is located in an area with currently undetermined flood hazards according to FEMA. Some immediately adjacent areas are located within a 100-year flood zone (Flood Zone A). As discussed under the NEPA analysis, with implementation of Mitigation Measures MM 3.16-2a and MM 3.16-3a for the solar facility portion of the project and Mitigation Measures MM 3.16-2b and MM 3.16-3b for the gen-tie portion of the project, the impact of project construction, operation and maintenance, and decommissioning with respect to flood hazards would be minor and less than significant. Preparation of a final flood hazard assessment as required by Mitigation Measure MM 3.16-3a for the solar facility portion of the project and Mitigation Measure MM 3.9-3b for the gen-tie portion of the project, would ensure that flood hazards on the site are assessed in accordance with the County Floodplain Management Ordinance, and that structures are designed so that damage is avoided in a 100-year flood. Preparation of a grading plan as required by Mitigation Measure MM 3.16-4a for the solar facility portion of the project and Mitigation Measure MM 3.16-4b for the gen-tie portion of the project would incorporate drainage features where necessary to avoid impacts from flood flows. Based on these findings, proposed facilities would be designed to allow for drainage to pass through the site. Therefore, the construction and operation of the proposed facilities would have a less-than-significant impact related to impeding or redirecting flood flows.

Mitigation Measures

Implement Mitigation Measures MM 3.16-2a, MM 3.16-2b, MM 3.16-3a, MM 3.16-3b, MM 3.16-4a, and MM 3.16-4b (see Section 3.16.5 for mitigation measures).

Level of Significance

Impacts would be less than significant.

3.16.3.2 Alternative B: Up to 1,500-Acre EUL

NEPA: Environmental Impacts

Construction and Decommissioning

The Alternative B solar facility would be located within the same footprint as the Alternative A project site and would use the same gen-tie route options proposed for Alternative A. However, the developer would have increased flexibility to site solar arrays within the identified project site and a greater ability to avoid sensitive environmental resources and avoid terrain that is not optimal for solar development. Alternative B would result in similar construction impacts to hydrology and water quality as described in Alternative A. Similar to Alternative A, water quality degradation from erosion, sedimentation, and release of hazardous chemicals during construction activities could result under this alternative; a SWPPP would be required to mitigate these impacts. However, because fewer acres of ground surface would be disturbed during construction of Alternative B, impacts related to erosion and/or flooding would be reduced. The construction period would also be shorter for Alternative B, which would result in a lower water demand. Impacts associated with the construction of Alternative B would be similar but of a lower magnitude than Alternative A. All mitigation measures identified for Alternative A would also be required for Alternative B.

Alternative B would undergo the same decommissioning process as Alternative A. However, because of the reduced size of this alternative, the geographic area undergoing disassembly of solar facilities would be less than that of Alternative A. This smaller size would limit the area within which impacts to hydrology and water quality could result. Consequently, impacts associated with the decommissioning of Alternative B would be reduced relative to Alternative A.

Operation and Maintenance

Alternative B would result in similar operational impacts to hydrology and water quality as described in Alternative A. Similar to Alternative A, Alternative B would require the use of septic systems, however, because of the reduced size of this alternative, the amount of pervious ground surface lost and the potential to disrupt existing drainage patterns would be less for Alternative B than for Alternative A, and operational water demand would likely be less due to the lower amount of panels. This smaller size would limit the area within which impacts to the public, workers, and the environment could result. Consequently, impacts associated with operation and maintenance of Alternative B would be reduced relative to Alternative A. All mitigation measures identified for Alternative A would be required for Alternative B.

CEQA: Impact Significance Determination

The significance conclusions for impacts to hydrology and water quality under Alternative A would be less than significant with mitigation incorporated. The types of facilities installed and the general location would be the same for both Alternative A and Alternative B. Since Alternative B would result in less physical development than Alternative A; it is likely that this alternative would result in reduced impacts to hydrology and water quality. Therefore, impacts related to hydrology and water quality under Alternative B would also be less than significant with implementation of the same mitigation measures.

Mitigation Measures

Implement Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.16-1a through MM 3.16-4a, and MM 3.16-1b through 3.16-4b (see Sections 3.9.5 and 3.16.5 for mitigation measures).

3.16.3.3 Alternative C: No Action/No Project

NEPA: Environmental Impacts

Construction, Operation, and Decommissioning

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions or the existing environmental setting as described previously. There would be no construction, grading, or employees on the site; therefore, there would be no potential for significant impacts to hydrology and water quality to occur. Thus, Alternative C would not result in significant impacts to hydrology and water quality.

CEQA: Impact Significance Determination

Alternative C would not result in significant impacts concerning hydrology and water quality.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

Impacts would be less than significant.

3.16.4 Cumulative Impact Analysis

3.16.4.1 NEPA: Cumulative Environmental Effects and Their Significance

Surface Water Quality and Drainage Pattern

The temporal scope of hydrology and water quality impacts would occur throughout the life of the project. Typically, the geographic scope for cumulative effects relating to hydrology and water quality would be the watershed boundary and groundwater basin. It is estimated that the water onsite likely evaporates or infiltrates prior to establishing a hydrological connection to the adjacent Rogers Dry Lake. No onsite water bodies have any water quality impairments. Additionally, there is no established hydrological connection between onsite water bodies and other surface water bodies. Therefore, cumulative impacts related to water quality, erosion and sedimentation would be site-specific. Construction, operation and maintenance, and decommissioning of the project could result in impacts to water quality through the improper containment of pollutants; however, with implementation of Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.16-1a through MM 3.16-4a, and MM 3.16-1b through MM 3.16-4b, the potential risks of water quality degradation would be reduced.

Groundwater Quality and Infiltration

The geographic area for groundwater impacts typically includes the collective groundwater basin. Water for project construction, operation, and decommissioning uses would be trucked in. Some

of the cumulative projects could rely on onsite wells for a portion or all of their water supply or could have water trucked in to the site. The Fremont Valley groundwater basin is not in an identified state of critical overdraft. Projects that would acquire water from offsite, would be required to do so from a water purveyor with sufficient water available to provide its customers. Cumulative projects could result in impacts to groundwater recharge during operation through the introduction of impervious surfaces to the area and consequential reduction of infiltration area. However, 54 of the 90 cumulative projects considered in the cumulative analysis would be solar projects, which by nature would consist of mostly lifted solar panels and would maintain the majority of pervious surfaces onsite. Further, the projects would be mostly spread out throughout the area, maintaining pervious surfaces between impervious surfaces. Should an abandoned water well be uncovered during construction, the Kern County Public Health Department would be consulted regarding appropriate well destruction procedures and permitting, thereby avoiding impacts to groundwater during the process. No adverse impacts related to groundwater quality and infiltration are expected to occur.

Structures Within a Flood Zone

The only effect of the project on flooding and flood zones relate to the potential for pre-existing flood hazards to damage or inundate project facilities, thereby introducing potential water quality impacts to receiving waters. The effect of the project on pre-existing flood extents and depths would be negligible or non-existent. In accordance with Mitigation Measures MM 3.16-2a and MM 3.16-3a for the solar facility portion of the project and Mitigation Measures MM 3.16-2b and MM 3.16-3b for the gen-tie portion of the project, a Final Flood Hazard Assessment using this updated flood zone data would be prepared that disclose flood hazards and design the project. The report would also include the final design for the drainage mitigation features that would be designed to capture the predicted increase in site runoff resulting from the project. In addition, the cumulative projects would be required to adhere to Kern County Development Standards, which establish guidelines that include onsite drainage flow requirements. Adverse cumulative impacts related to flooding are not expected.

3.14.4.2 CEQA: Cumulative Impact Significance Determination

As previously described, development of the project, with implementation of the regulatory requirements discussed in this section, would not result in adverse cumulative impacts related to hydrology and water quality, largely because the majority of the surface flows passing through the project site are ephemeral and do not have a downstream connection with other water bodies. Cumulative impacts related to water quality degradation, erosion, siltation, flooding, and groundwater would be less than significant with implementation of Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.16-1a through MM 3.16-4a, and MM 3.16-1b through MM 3.16-4b.

As described in Chapter 3, *Environmental Analysis*, multiple projects, including several utility-scale solar and wind energy production facilities, are proposed throughout Kern County, the city of Palmdale, the city of Lancaster, and unincorporated Los Angeles County. Many are located, like the project site, in the Mojave Desert and Antelope Valley. The geographic scope for the hydrology and water quality cumulative analysis is the Antelope Valley Watershed and the Fremont Valley Groundwater Basin.

As shown in Table 3-1, multiple utility-scale renewable energy projects are proposed for the Antelope Valley Watershed and range in status from their application stage to their preconstruction stage. Fifty-four solar energy projects are proposed or approved within the vicinity of the project site within Kern County. With many of these projects expected to undergo construction in the next few years, the Eastern Antelope Valley will experience increasing demands on water resources, associated in particular with the construction phase of these projects. The water-intensive use period for the Proposed Action is limited to the construction phase (requiring up to 200 AFY and 30 AFY maximum for operation); therefore, the temporal scope of analysis is limited to the approximately 2-year period beginning when the Proposed Action would be under construction.

Project construction would require approximately 200 AFY over a 2-year period. Operational water demand would be approximately 30 AFY (totaling approximately 2,300 acre-feet over 50 years). The project would require approximately 200 AFY during decommissioning. Project water supply, including potable water for drinking purposes for the operations and maintenance facility personnel and for operations would be trucked in from the Mojave PUD, which obtains its water from the Fremont Valley groundwater basin and a connection with the AVEK. The Fremont Valley groundwater basin is not in a condition of critical overdraft, and the Mojave PUD has indicated sufficient supplies are available for the project's construction and operation. Prior to decommissioning, the project would be required to obtain a will-serve letter from a water purveyor. As concluded in the project WSA (Appendix B19), the project's water demand would not substantially affect groundwater levels or groundwater recharge (see Section 3.10, *Infrastructure*, for more details on cumulative water supply). Since the site is currently composed of open space, the operational water use for the project would represent an increase in existing water demand. Other recent, present, and proposed solar projects of a similar scope included on Table 3-1 would likely have comparable water supply needs for construction and operation. Unlike the Proposed Action, many of the other solar energy projects in the Antelope Valley Watershed would replace agricultural uses and would greatly reduce existing operational water demand. If all solar projects would depend on local groundwater sources, short-term construction-related demands on groundwater would be high when considering all projects in the cumulative scenario; however, as the solar projects are at various phases of progress (from application approval to preconstruction), it is unlikely that construction of all or many of the proposed solar projects would overlap. Further, the solar projects could obtain water from various water sources, including other groundwater basins or surface water supplies. Therefore, the proposed project would not represent a cumulatively considerable contribution to water resource impacts on the basin. Cumulative impacts related to water supplies would be less than significant.

The cumulative setting for soil erosion consists of recent, present, and proposed land use conditions in the Antelope Valley Watershed, because such a scope allows for analysis of water quality impacts on the rest of the watershed. Project construction activities would consist of grading and vegetation removal activities that could result in erosion and sedimentation that decreases water quality. In addition, construction and decommissioning could result in spills chemicals that could also affect water quality. However, the project would develop a SWPPP including site-specific erosion control, sediment control, waste management non-stormwater management and post-construction BMPs in order to comply with Construction General Permit requirements (see Mitigation Measures MM 3.16-1a and MM 3.16-1b). Operation could also result in the degradation

of water quality from fuel leaks and other chemicals associated with maintenance activities. The developer would be required to develop a Hazardous Materials Business Plan that would describe proper handling of hazardous materials and spill response procedures should an accidental spill occur (see Mitigation Measures MM 3.9-1a and MM 3.9-1b). The proposed septic systems associated with the Proposed Action could also impact water quality if not properly installed or maintained. However, the developer would be required to perform percolation testing, submit septic system plans to the County and regularly maintain systems (see Mitigation Measure MM 3.7-2a) to ensure appropriate installation and operation of septic systems. The septic systems would also be required to be located a certain distance away from various water quality features to avoid water quality effects. In addition to these requirements, the Proposed Action would be required to comply with applicable codes, standards, and permitting requirements to mitigate erosion and water quality impacts.

The other 54 proposed solar projects would be expected to include similar construction, operation, and decommissioning activities; would be subject to the same codes, standards, and permitting requirements; and would be required to develop SWPPP and Hazardous Materials Business Plans if they meet applicable requirements. They would also be subject to compliance with septic system testing, plan, maintenance, and setback requirements. In addition, dust control measures are included as part of Mitigation Measures MM 3.3-1a for the solar facility portion of the project and Mitigation Measure MM 3.3-1b for the gen-tie portion of the project, in Section 3.3, *Air Quality*, to reduce airborne pollutants. Impacts associated with erosion are mitigated on a project-by-project basis, which would reduce the overall cumulative impact to a less-than-significant level.

The Proposed Action could result in flooding as a result of an increase of impervious materials onsite. The project would not alter the course of any existing creek or stream in the vicinity of the project. As discussed, the developer would design the proposed facilities to maintain existing drainage patterns when feasible and to capture the estimated increase in runoff with drainage mitigation features if necessary. The developer would be required to prepare a Final Flood Hazard Assessment in compliance with the County Floodplain Management Ordinance determining the extent of flood hazards throughout the project site (Mitigation Measures MM 3.16-2a, MM 3.16-3a, MM 3.16-2b, and MM 3.16-3b), as well as a Grading Plan in compliance with the County Grading Code that would include any necessary drainage devices to minimize runoff (Mitigation Measures MM 3.16-4a and MM 3.16-4b). All other projects in Table 3-1 would be subject to the same federal, state, and local regulations regarding flooding. The project would not have a cumulatively considerable contribution to impacts on hydrology and water quality.

Mitigation Measures

Implement Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.16-1a through MM 3.16-4a, MM 3.16-1b through MM 3.16-4b, and MM 3.7-2a (see Sections 3.9.5 and 3.16.5 for mitigation measures).

Level of Significance after Mitigation

Cumulative impacts would be less than significant.

3.16.5 Mitigation Measures

Implement Mitigation Measures MM 3.7-2a, MM 3.9-1a and MM 3.9-1b: Hazardous Materials Business Plan (see Sections 3.7, *Geology and Soils*, and 3.9, *Hazardous Materials and Safety*, for the full mitigation measures).

3.16.5.1 Solar Facility Mitigation Measures

MM 3.16-1a: Stormwater Pollution Prevention Plan. Prior to issuance of a grading permit for construction or decommissioning, the developer shall submit a Stormwater Pollution Prevention Plan to the Kern County Engineering, Surveying, and Permit Services Department that specifies best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sediment and other pollutants from moving offsite and into receiving waters. The requirements of the Stormwater Pollution Prevention Plan shall be incorporated into design specifications and construction contracts. Best management practices categories employed onsite would include erosion control, sediment control, good housekeeping, and post-construction. Best management practices for the construction phase shall include, but not be limited to, those listed below.

1. Erosion Control
    a. Use of existing roadways to the maximum extent possible
    b. Limiting grading to the minimum area necessary for construction, operation and decommissioning of the project
    c. Encourage maintenance of existing topography and limit vegetation disturbance/removal such as through mowing to the maximum extent possible
2. Sediment Control
    a. Implementing fiber rolls and sand bags around drainage areas and the site perimeter
    b. Stockpiling and disposing of demolition debris, concrete, and soil properly
    c. Installation of a stabilized construction entrance/exit and stabilization of disturbed areas
3. Good Housekeeping
    a. Implement proper protections for fueling and maintenance of equipment and vehicles
    b. Manage waste and aggressively control litter
4. Post Construction
    a. Stabilize soil in disturbed areas either by revegetation or chemical stabilizer
    b. Implement any necessary drainage mitigation
    c. Revegetate any disturbed areas

MM 3.16-2a: Federal Emergency Management Agency Flood Zone Mapping and Strategic Construction Siting and Facility Placement. Prior to the preparation of the Final Flood Hazard Assessment (Mitigation Measure MM 3.16-3a) and the Grading Plan (Mitigation Measure MM 3.16-4a), the developer would consult with the Federal Emergency Management Agency for flood zone mapping services of the estimated area of impact on Edwards Air Force Base that is currently unmapped. Once flood risks are determined by the Federal Emergency Management

Agency, these official flood zone boundaries would be incorporated into the final version of all technical hydrology and flood-related documents prepared for the project so that appropriate design recommendations for the projects can be made. Based on specific flood zone information, construction staging areas and final project structures would be sited to avoid existing hydrologic features (including flood zones and drainages) to the maximum extent possible.

MM 3.16-3a: Final Flood Hazard Assessment. Prior to construction, a Final Flood Hazard Assessment shall be prepared for the project. The Final Flood Hazard Assessment shall describe the existing flood risks onsite and how the project structures would be designed to incorporate the requirements of the Kern County Floodplain Management Ordinance. The existing flood risks on the Edwards Air Force Base portion of the site shall be determined through developer coordination with the Federal Emergency Management Agency (see Mitigation Measure MM 3.16-2a). For any solar arrays installed within flood zones, final design of the solar arrays shall include 1 foot of freeboard clearance above the calculated maximum flood depths for the solar arrays or the finished floor of any permanent structures. Where deemed necessary, solar panel sites shall be minimally graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways without increasing the water surface elevations more than 1 foot or as otherwise required by Kern County's Floodplain Management Ordinance and in accordance with the final Grading Plan as approved by Kern County Public Works - Engineering. The Final Flood Hazard Assessment shall be approved by the Floodplain Management Section of the Kern County Public Works Department prior to the issuance of a grading permit for the project.

MM 3.16-4a: Grading Plan. Prior to commencement of construction or decommissioning activities, the developer shall prepare a Grading Plan per the Kern County Grading Code and Kern County Grading Guidelines. The Grading Plan shall include the location of all existing drainages onsite, project grading details and the drainage devices and erosion control features that would be installed onsite to minimize excess site runoff, erosion and sedimentation. Examples of features installed onsite that would minimize runoff, erosion and sedimentation include energy dissipaters, and water quality inlets. The plan shall also disclose flood protection measures implemented for structures onsite as identified in the Flood Hazard Assessment (see Mitigation Measure MM 3.16-3a). Flood zone information used in the preparation of the grading plan would be based on flood zone maps obtained from developer consultation with FEMA (see Mitigation Measure MM 3.16-2a). The Grading Plan shall be approved by Kern County Public Works – Engineering prior to issuance of a grading permit.

MM 3.16-5a: Hydrologic Analysis and Drainage Plan. Prior to the issuance of a grading permit, the project proponent shall complete a hydrologic study and drainage plan designed to evaluate and minimize potential increases in runoff from the project site. The study shall include, but is not limited to the following:

1. Numerical stormwater model for the project site, and would evaluate existing and proposed (with project) drainage conditions during storm events ranging up to the 100-year event.
2. The study shall also consider potential for erosion and sedimentation in light of modeled changes in stormwater flow across the project area that would result from project implementation.
3. The drainage plan would include engineering recommendations to be incorporated into the project and applied within the site boundary. Engineering recommendations will include measures to offset increases in stormwater runoff that would result from the project, as well as implementation of design measures to minimize or manage flow concentration and

changes in flow depth or velocity so as to minimize erosion, sedimentation, and flooding on-site or off-site.

4. The final design of the solar arrays shall include one-foot of freeboard clearance above the calculated maximum flood depths for the solar arrays or the finished floor of any permanent structures. Solar panel sites located within a 100-year floodplain shall be graded to direct potential flood waters without increasing the water surface elevations more than one foot or as required by Kern County's Floodplain Ordinance.
5. The hydrologic study and drainage plan shall be prepared in accordance with the Kern County Grading Code and Kern County Development Standards, and approved by the Kern County Public Works Department prior to the issuance of grading permits.

3.16.5.2 Gen-tie Mitigation Measures

MM 3.16-1b: Stormwater Pollution Prevention Plan. Prior to issuance of a grading permit for construction or decommissioning for the generation tie-line installation, the developer shall submit a Stormwater Pollution Prevention Plan to the Kern County Engineering, Surveying, and Permit Services Department that specifies best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sediment and other pollutants from moving offsite and into receiving waters. The requirements of the Stormwater Pollution Prevention Plan shall be incorporated into design specifications and construction contracts. Best management practices categories employed onsite would include erosion control, sediment control, good housekeeping, and post-construction. Best management practices for the generation tie-line construction phase shall include, but not be limited to, those listed below.

1. Erosion Control
    a. Use of existing roadways to the maximum extent possible
    b. Limiting grading to the minimum area necessary for construction, operation and decommissioning of the project
    c. Encourage maintenance of existing topography and limit vegetation disturbance/removal such as through mowing to the maximum extent possible
2. Sediment Control
    a. Implementing fiber rolls and sand bags around drainage areas and the site perimeter
    b. Stockpiling and disposing of demolition debris, concrete, and soil properly
    c. Installation of a stabilized construction entrance/exit and stabilization of disturbed areas
3. Good Housekeeping
    a. Implement proper protections for fueling and maintenance of equipment and vehicles
    b. Manage waste and aggressively control litter
4. Post Construction
    a. Stabilize soil in disturbed areas either by revegetation or chemical stabilizer
    b. Implement any necessary drainage mitigation
    c. Revegetate any disturbed areas

MM 3.16-2b: Federal Emergency Management Agency Flood Zone Mapping and Strategic Construction Siting and Facility Placement. Prior to the preparation of Final Flood Hazard Assessment and Grading Plan the developer would consult with the Federal Emergency Management Agency for flood zone mapping services of the estimated area of impact on generation tie line routes that are currently unmapped. Once flood risks are determined by the Federal Emergency Management Agency, these official flood zone boundaries would be incorporated into the final version of all technical hydrology and flood-related documents prepared for the project so that appropriate design recommendations for the projects can be made. Based on specific flood zone information, construction staging areas and final project structures would be sited to avoid existing hydrologic features (including flood zones and drainages) to the maximum extent possible.

MM 3.16-3b: **Final Flood Hazard Assessment.** Prior to construction, a Final Flood Hazard Assessment shall be prepared for the project. The Final Flood Hazard Assessment shall describe the existing flood risks onsite and how the project structures would be designed to incorporate the requirements of the Kern County Floodplain Management Ordinance. The existing flood risks on the generation tie line routes shall be determined through developer coordination with the Federal Emergency Management Agency. For any generation tie line routes installed within flood zones, final design of the solar arrays shall include 1 foot of freeboard clearance above the calculated maximum flood depths. Where deemed necessary, generation tie line routes shall be minimally graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways without increasing the water surface elevations more than 1 foot or as otherwise required by Kern County's Floodplain Management Ordinance and in accordance with the final Grading Plan as approved by Kern County Public Works - Engineering. The Final Flood Hazard Assessment shall be approved by the Floodplain Management Section of the Kern County Engineering, Surveying, and Permit Services Department prior to the issuance of a grading permit for the project.

MM 3.16-4b: Grading Plan. Prior to commencement of generation tie-line construction or decommissioning activities, the developer shall prepare a Grading Plan per the Kern County Grading Code and Kern County Grading Guidelines. The Grading Plan shall include the location of all existing drainages onsite, project grading details and the drainage devices and erosion control features that would be installed along the generation tie line routes to minimize excess site runoff, erosion and sedimentation. Examples of features installed onsite that would minimize runoff, erosion and sedimentation include energy dissipaters and water quality inlets. The plan shall also disclose flood protection measures implemented for structures onsite as identified in the Flood Hazard Assessment. Flood zone information used in the preparation of the Grading Plan would be based on flood zone maps obtained from developer consultation with FEMA. The Grading Plan shall be approved by County prior to issuance of a grading permit.

MM 3.16-5b: Hydrologic Analysis and Drainage Plan. Prior to the issuance of a grading permits for the generation tie-lines, the project proponent shall complete a hydrologic study and drainage plan designed to evaluate and minimize potential increases in runoff from the generation tie line routes. The study shall include, but is not limited to the following:

1. Numerical stormwater model for the generation tie-line site, and would evaluate existing and proposed (with project) drainage conditions during storm events ranging up to the 100-year event.
2. The study shall also consider potential for erosion and sedimentation in light of modeled changes in stormwater flow across the project area that would result from project implementation.

3. The drainage plan would include engineering recommendations to be incorporated into the project and applied within the site boundary. Engineering recommendations will include measures to offset increases in stormwater runoff that would result from the installation of generation tie lines, as well as implementation of design measures to minimize or manage flow concentration and changes in flow depth or velocity so as to minimize erosion, sedimentation, and flooding onsite or offsite.
4. The hydrologic study and drainage plan shall be prepared in accordance with the Kern County Grading Code and Kern County Development Standards, and approved by the Kern County Public Works Department prior to the issuance of grading permits for the generation tie-line installation.

3.16.6 Residual Impacts after Mitigation

Mitigation Measures MM 3.9-1a, MM 3.9-1b, MM 3.16-1a, MM 3.16-1b, MM 3.16-2a, MM 3.16-2b, MM 3.16-3a, MM 3.16-3b, MM 3.16-4a, MM 3.16-4b, MM 3.16-5a, and MM 3.16-5b would substantially reduce potential impacts related to water quality, erosion, siltation, and flooding by requiring implementation of preventative measures and precautions and compliance with regulatory requirements. These measures also require hazardous substances are appropriately handled and spills are appropriately addressed.

Although unlikely, following implementation of the mitigation measures, it is possible that water quality degradation, erosion, siltation, and/or flooding could occur. No other residual impacts are expected to occur as a result of construction, operation and maintenance, and/or decommissioning of the proposed project or as a result of an alternative. Implementation of the Proposed Action is not expected to result in adverse impacts under NEPA or significant impacts under CEQA related to hydrology and water quality.

3.16

CHAPTER 4
CEQA Alternatives

4.1 Introduction

This section of the EIS/EIR describes Kern County's CEQA project objectives, the CEQA alternatives eliminated from further consideration, and the CEQA alternatives selected for analysis. This section also discusses the CEQA Environmentally Superior Alternative to be determined by Kern County.

CEQA requires that an EIR describe a range of reasonable alternatives to the proposed project or to the location of the proposed project that could feasibly avoid or lessen any significant environmental impacts of the proposed project while attaining most of the project's basic objectives. An EIR also must compare and evaluate the environmental effects and comparative merits of the alternatives. This chapter describes alternatives considered but eliminated from further consideration (including the reasons for elimination), and compares the environmental impacts of several alternatives retained with those of the proposed project.

The following are key provisions of the CEQA Guidelines (Section 15126.6):

- The discussion of alternatives shall focus on alternatives to the proposed project or its location that are capable of avoiding or substantially lessening any significant effects of the proposed project, even if these alternatives would impede to some degree the attainment of the proposed project objectives, or would be more costly.
- The No Project Alternative shall be evaluated, along with its impacts. The no project analysis shall discuss the existing conditions at the time the Notice of Preparation was published, as well as what would be reasonably expected to occur in the foreseeable future if the proposed project were not approved, based on current plans and consistent with available infrastructure and community services.
- The range of alternatives required in an EIR is governed by a "rule of reason"; therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the proposed project. The EIR then examines the alternatives which the lead agency determines could feasibly attain most of the proposed project's objectives.
- For alternative locations, only locations that would avoid or substantially lessen any of the significant effects of the proposed project need be considered for inclusion in the EIR.
- An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative.

The range of feasible alternatives is selected and discussed in a manner to foster meaningful public participation and informed decision making. Among the factors that may be taken into account when addressing the feasibility of alternatives (as described in Section 15126.6(f)(1) of the CEQA Guidelines) are environmental impacts, site suitability, economic viability, social and political acceptability, technological capacity, availability of infrastructure, General Plan consistency, regulatory limitations, jurisdictional boundaries, and whether the developer could reasonably acquire, control, or otherwise have access to an alternative site. An EIR need not consider an alternative whose effects could not be reasonably identified, whose implementation is remote or speculative, and that would not achieve the basic project objectives.

The proposed project has the potential to have significant, unavoidable adverse effects on:

- Aesthetics
- Air Quality

Mitigation measures outlined in these issue area's respective sections would reduce impacts; however, the impacts would remain significant and unavoidable. As a result, CEQA requires that an alternatives analysis be prepared to discuss alternatives to the proposed project that are capable of avoiding or substantially lessening effects on these resources. The significant and unavoidable impacts of the proposed project are discussed below.

4.2 Significant Impacts of the Proposed Project after Mitigation

4.2.1 Aesthetics

The industrial nature of the facilities, when introduced into the project viewshed, would substantially change the existing visual character of the landscape as viewed from sensitive receptors from around the site (Impact 3.1-1). The proposed facility would substantially modify views in an area which is currently defined by undeveloped and rural lands.

Mitigation measures are incorporated to reduce the severity of aesthetics impacts. Mitigation Measures MM 3.1-1a and MM 3.1-2a for the solar facility portion of the project and Mitigation Measure MM 3.1-3b for the gen-tie portion of the project would reduce lighting and glare impacts of the project. Mitigation Measure MM 3.5-4a for the solar facility portion of the project and Mitigation Measure MM 3.1-1b for the gen-tie portion of the project would incorporate drought tolerant planting and native revegetation restoration plans to ensure the site naturally achieves native plant diversity, consistent with conditions prior to implementation of the project. Mitigation Measure MM 3.1-3a for the solar facility portion of the project and Mitigation Measure MM 3.1-2b for the gen-tie portion of the project would reduce impacts that could occur from the collection of debris along the project site's boundaries. However, there are no feasible mitigation measures that can be implemented to preserve the existing open space landscape character at the project site while at the same time developing a solar energy facility. It is expected that even with effective implementation of Mitigation MM 3.5-4a for the solar facility portion of the project and Mitigation

Measure MM 3.1-1b for the gen-tie portion of the project, the residual impacts associated with land scarring and vegetation clearance would remain for several years given the difficulty of successful revegetation in an arid environment. This would result in an unavoidable, long-term adverse impact to visual resources. While it is not expected the proposed project would create a new source of substantial light that would adversely affect nighttime views in the area, any light would be subject to Mitigation Measure MM 3.1-1a for the solar facility portion of the project and Mitigation Measure MM 3.1-3b for the gen-tie portion of the project, and would be directed downward and shielded to focus illumination on the desired areas only. However, an unavoidable, long-term, adverse impact to visual resources would result in a cumulative level. Impacts to visual resources as rated utilizing standardized criteria would remain significant and unavoidable despite implementation of these mitigation measures. The proposed project, coupled with the other surrounding solar projects, would significantly alter the character of the landscape, as well as nighttime lighting impacts, and is cumulatively considerable.

4.2.2 Air Quality

The proposed project would result in criteria pollutant emissions during construction, operation, and maintenance, and decommissioning. Construction-related emissions are expected to be below Eastern Kern Air Pollution Control District (EKAPCD) significance thresholds for construction vehicle emissions, except for PM_{10} indirect mobile emissions, despite any mitigation and would therefore be significant and unavoidable. Indirect mobile emissions would not exceed any of the applicable significance thresholds, and given the long distance of the project site to the nearest sensitive receptors, the project would not result in significant impacts related to exposing sensitive receptors to emissions of hazardous air pollutants. Long-term emissions from the proposed project would consist of vehicular emissions from maintenance and operations employees as well as cleaning and maintenance equipment. Long-term emissions would consist of fugitive dust emissions and exhaust emissions from vehicles. Emissions from decommissioning would be similar to those generated during construction. Mitigation Measures MM 3.3-1a through MM 3.3-9a for the solar facility portion of the project site and MM 3.3-1b through 3.3-6b for the gen-tie portion of the site would substantially reduce potential impacts associated with implementation of dust and exhaust preventative measures and precautions. Even with implementation of those mitigation measures, PM_{10} during construction would still be in violation of the EKAPCD standards and thus would result in a significant and unavoidable impact. Cumulative impacts could result from construction of the project in conjunction with other projects in the area. Proposed project emissions of ozone precursors due to grading activities and the use of heavy-duty diesel equipment would combine with emissions from cumulative projects to contribute to the current nonattainment status of these pollutants within the Mojave Desert Air Basin, resulting in a cumulatively considerable impact.

4.3 CEQA Project Objectives

As described in Section 1.0, *Introduction and Purpose and Need*, the following objectives have been established for the proposed project and will aid decision makers in the review of the project and associated environmental impacts.

4.3.1 Project Objectives

The Applicant's objectives include the following:

- Establish a solar photovoltaic (PV) generating facility greater than 100 megawatts (MW) in order to assist the state of California in achieving the Renewable Portfolio Standard (RPS) for 2030, by providing a significant new source of renewable energy (California State Assembly Bill [AB] 32, Senate Bill [SB] 1078, SB 107 and SB 2).
- Supply clean, safe, renewable energy.
- Produce and transmit electricity at a competitive cost and in a manner that is eligible for commercial financing.
- Use technology that is available, proven, efficient, easily maintained, recyclable, and environmentally sound.
- Support the economic development of Kern County, and the State of California.
- Enhance existing electrical distribution infrastructure and provide greater support to existing and future customer loads.
- Ensure that the development plans support County operations in a manner consistent with County plans.
- Minimize environmental effects by:
    - Using existing electrical distribution facilities, rights-of-way, roads, and other existing infrastructure, where practicable;
    - Minimizing impacts on threatened and/or endangered species;
    - Minimizing water use; and
    - Reducing greenhouse gas (GHG) emissions.
- Advance Department of Defense energy resilience and security goals by optimizing the value of under-utilized Air Force real property assets consistent with Department of Defense Instruction 4170.11, Installation Energy Management and the Air Force Energy Flight Plan, 2017-2036.

4.4 Project Summary

The Air Force Proposed Action is to lease land to a developer for the construction, operation, and maintenance of the Edwards Air Force Base (AFB) Solar Project, a solar PV renewable energy project (proposed project, or Proposed Action) at Edwards AFB. The final scale of the Proposed Action is anticipated to be up to 750 MW, with the generated energy distributed to investor owned utilities, municipalities, and other energy off-takers. The construction scale of such a project would require multiple Air Force outgrants for the development of up to 4,000 acres of non-excess land at Edwards AFB. It should be noted that the study area evaluated in this EIS/EIR included 5,800 acres. Through the siting and initial design process, the Air Force was able to minimize impacts to environmentally sensitive areas.

The proposed project would occur in three phases. Phase one actions would include the construction of renewable energy solar arrays and electrical interconnection lines and the infrastructure necessary to connect to the grid. Once these are constructed and installed, phase two actions would include the operation and maintenance of proposed project facilities. The third and final phase would occur at the expiration of the lease term, which is projected to reasonably expire at the end of the useful life of the proposed project infrastructure, anticipated not to exceed 35 years. The solar facility on the leased Air Force land would be decommissioned and the land returned to the Air Force for another land use. Detailed provisions concerning the construction, operation, maintenance and generalized decommissioning actions of the solar PV system, including environmental management and mitigation measures, would be addressed in the lease agreement. The proposed lease, once implemented, would be in place through all project phases and the elements of environmental management, mitigation, and best management practices (BMPs) would occur during project phases, as appropriate. Any significant or major changes in the project activities analyzed in this EIS/EIR may require additional NEPA considerations, including supplemental environmental analysis under Air Force's Environmental Impact Analysis Process (EIAP) and CEQA regulations.

A Franchise Agreement with the County would be required to use County franchise rights for routing of a 230-kilovolt (kV) generation-tie (gen-tie) line from the proposed solar facility to a point of interconnection where power generated by the project can be delivered to the grid. Points of interconnection may include the Southern California Edison Windhub Substation and/or the privately owned Westwind Substation. The gen-tie line would allow electricity generated from the project to reach high-voltage transmission lines that would be able to carry power to utility customers. The proposed 230 kV gen-tie line would run across publicly and privately owned property within Kern County. The final gen-tie route will be determined by the ability to acquire access easements for construction and installation of the line from public and private entities.

4.5 CEQA Alternatives Eliminated from Further Consideration

Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce any significant environmental effects (CEQA Guidelines, Section 15126.6 [c]). Alternatives that are remote or speculative, or the effects of which cannot be reasonably predicted, also do not need to be considered (CEQA Guidelines, Section 15126.6 [f][3]). Kern County considered several alternatives to reduce the project's impacts on aesthetics, air quality, and noise. Per CEQA, the lead agency may make an initial determination as to which alternatives are feasible and warrant further consideration and which are infeasible. The following alternatives were initially considered but were eliminated from further consideration in this EIS/EIR because they do not meet project objectives or are infeasible.

4.5.1 Wind Energy Project Alternative

The Wind Energy Project Alternative would involve the use of wind energy as an alternative for development of a solar facility. As with solar power, power from the wind is an alternative to energy production from coal, oil, or nuclear sources. Wind energy provides the following benefits:

- It is a renewable and infinite resource.
- The electrical generation is free of any emissions during operations, including carbon dioxide (i.e., GHGs).
- It is a free resource after the capital cost of installation (excluding maintenance).
- Energy production from wind power would not require the significant water usage associated with coal, nuclear, and combined-cycle sources.

Turbines used in wind farms for commercial production of electric power are usually three-bladed units that are pointed into the wind by computer-controlled motors. The wind farm would consist of a group of wind turbines placed where electrical power is produced. The individual turbines would be interconnected with a medium-voltage power collection system and a communications network. At a substation, the medium-voltage electrical current would be increased through a transformer before connection to the high-voltage transmission system. Compared with traditional energy sources, the environmental effects of wind power are relatively minor. Unlike fossil fuel power sources, wind power consumes no fuel and emits no air pollution. However, wind farms would not decrease short-term construction-related air emissions. Unlike the proposed project, wind turbines would have the potential to affect avian species in the local area.

As noted above, some of the objectives for the proposed project are to develop a solar project that would help meet the increasing demand for clean, renewable electrical power, as well as help California meet its statutory and regulatory goals of generating more renewable power with minimum potential for environmental effects and land use conflicts. Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce significant environmental effects. Therefore, this alternative was eliminated from further consideration because:

- It would result in additional/greater potential biological resources impacts than the proposed project.
- It would not substantially reduce the significant cumulative impacts associated with construction-related air emissions.
- It would substantially increase the significant aesthetic impacts associated with the proposed project as wind turbines would be much taller than solar panels and more visible from many viewpoints rather than only the elevated hiking trails.
- It would have the potential to create greater long-term noise impacts than a solar PV project.

4.5.2 Alternative Site Alternative

This alternative would involve the development of the proposed project on another site located within Kern County. Although undetermined at this time, the alternative project site would likely remain in the Antelope Valley desert region of the county, similar to the proposed project. This alternative is assumed to involve construction of a PV solar facility greater than 100 MW on an approximate 4,000-acre site. CEQA Guidelines 15126.6(f)(2(a) states that the key and initial step in considering an alternative site Alternative is whether "any of the significant effects of the project would be avoided or substantially lessened" in relocating the project, while remaining consistent with the same basic objectives of the proposed project.

The Antelope Valley has attracted many renewable energy development applications, which are being proposed for vacant land or land with a history of agricultural uses. The availability of alternative sites is constrained by the renewable energy market itself. While other sites with similar size, configuration and use history may exist in the same general region (Antelope Valley), based on the known general conditions in the area and the magnitude of the proposal, an alternative project site in the area is likely to have similar significant project and cumulative impacts after mitigation, including cumulatively significant impacts to aesthetics, air quality, noise, and possibly agricultural and biological resources.

In addition, an alternative site for the project is not considered to be "potentially feasible" if there is no suitable site within the control of the developer that would reduce project impacts. Here, there is no alternative site within the developer's control where project development would result in fewer project impacts. Given the size of the proposed project and the project objectives, this alternative was eliminated because it would not avoid or substantially reduce the significant environmental effects of the proposed project.

4.6 CEQA Alternatives Selected for Analysis

A range of alternatives with the potential to attain most of the basic objectives of the proposed project but avoid or substantially lessen significant impacts is analyzed below. Each alternative is discussed in relation to the objectives of the proposed project. The Environmentally Superior Alternative, as required by CEQA, is described in the "Environmentally Superior Alternative" section. The following alternatives are analyzed in detail:

- Alternative A: 4,000-Acre Enhanced Use Lease (EUL) (Preferred Alternative)
- Alternative B: 1,500-Acre EUL
- Alternative C: No Action/No Project
- Alternative D: No Ground-Mounted Utility-Solar Development – Distributed Commercial and Industrial Rooftop Solar Only

Table 4-1 provides a summary of the relative impacts and feasibility of each alternative and **Table 4-2** provides a summary and side-by-side comparison of the potential impacts of the alternatives and the proposed project. A complete discussion of each alternative is also provided below.

TABLE 4-1
SUMMARY OF DEVELOPMENT ALTERNATIVES

Alternative	Description	Basis for Selection and Summary of Analysis
Alternative A: Proposed Project	• Solar panels on approximately 4,000 acres would generate up to 750 MW of electricity and deliver it to the grid. • Construction of an associated gen-tie line of approximately 16 miles in total length.	N/A
Alternative B: Reduced Project	• Solar panels on approximately 1,500 acres would generate greater than 100 MW of electricity and deliver it to the grid. • Same gen-tie line as under the proposed project.	• Reduces all construction-related impacts • Avoids significant impacts to air quality
Alternative C: No Action/No Project	• No development would occur on the project site. • Base operations at Edwards AFB would continue without benefit of the EUL or lease consideration. • Non-excess lands would not be utilized.	• Required by CEQA • Avoids all significant impacts except for noise
Alternative D: No Ground-Mounted Utility-Solar Development – Distributed Commercial and Industrial Rooftop Solar Only	• Industrial-scale PV solar distributed on rooftops throughout region.	• Avoids an EUL, CUP, and franchise agreement for project site, but may require other entitlements (such as a CUP or variance) on other sites • Avoids direct significant impacts to aesthetics and air quality • Potential reduction in construction-related impacts (air quality, water use, traffic, etc.)

4.6.1 Alternative B: 1,500-Acre EUL

This alternative would be similar to the proposed project but would be reduced in scale by approximately 2,500 acres. It would entail the construction, operation, and decommissioning of a solar facility greater than 100 MW on 1,500 acres of non-excess real property located within the project site.

4.6.1.1 Impacts Compared to Project Impacts

The following compares environmental impacts associated with the Reduced Project Alternative to those identified for the proposed project.

Aesthetics

Alternative B construction would cause temporary visual impacts due to the presence of equipment, materials and workforce. However, construction activities would occur over a shorter period of time than Alternative A. During operations and maintenance, the industrial nature of the Alternative B solar facility would change the visual character of the landscape as viewed from sensitive receptors for the life of the project, albeit to lesser degree than Alternative A. Like Alternative A,

construction activities and operational facilities would be visible from SR 14, Sierra Highway and Backus Road. However, construction along Trotter Avenue would be minimal under Alternative B, as this alternative layout extends primarily to the north and south, and eliminates construction to the east parallel to Trotter Avenue. The Visual Quality Rating Analyses for Key Observation Point (KOP) 1 and KOP 2 would be the same for Alternative B as rated for Alternative A in Tables 3.1-4 and 3.1-5 in Section 3.1, *Aesthetics*, of this EIS/EIR. Alternative B would not be visible from KOP 3, which is situated along Trotter Avenue as the solar facilities associated with Alternative B are sited further west and would not be visible from KOP 3. Therefore, the Visual Quality Rating shown in Table 3.1-6 would not be applicable to Alternative B. Implementation of Alternative A would result in potentially significant impacts as viewed from KOPs 1 and 2 resulting from a change to the area's visual quality and visual character. These ratings would be the same for Alternative B. Therefore, like Alternative A, Alternative B would have a significant and unavoidable impact concerning the substantial degradation of the existing visual character or quality of the site and its surroundings.

With regard to creating a new source of substantial light or glare that would adversely affect daytime or nighttime views in this area, Alternative B would result in similar impacts as Alternative A; however, construction would occur over a shorter period of time than Alternative A, and thus construction lighting would be used under a shorter period of time. Also, Alternative B would require less security lighting than Alternative A due to the reduced size of the solar facility. However, similar to Alternative A, if improperly designed or oriented, Alternative B lighting may result in light trespass that falls outside the site boundaries. With respect to glare impacts, Alternative B has a smaller footprint, and therefore would create less glare than Alternative A.

Air Quality

Alternative B would result in approximately one-third the physical development of Alternative A, but is expected to result in one half of the construction emissions and about two-thirds of the operational emissions of Alternative A but would not rise above the EKAPCD thresholds. Construction PM_{10} emissions would exceed the applicable U.S. Department of Environmental Protection General Conformity thresholds resulting in less-than-significant impacts.

Agricultural Resources

Because Alternative B would result in approximately one-third the physical development of Alternative A, it is likely that this alternative would result in reduced impacts to agricultural resources. However, because the construction and operation of the facility would remain the same as in Alternative A, the significance conclusions for the impacts identified for each phase of Alternative B (construction, operation and maintenance, decommissioning) would be the same as described above for Alternative A. Impacts relating to agricultural resources would be less than significant.

Airspace Management and Use

Like Alternative A, the gen-tie line poles would be the tallest structures constructed under Alternative B, which may be up to 180 feet in height. In addition, the Alternative B gen-tie route is in the same location as proposed under Alternative A. Therefore, Alternative B impacts concerning air space penetration would be the same identified for Alternative A. Because the Alternative B solar facility would be located within the same solar facility boundary as Alternative A, impacts involving communication system interference would be the same as identified for Alternative A. Alternative B would use the same PV solar technology as Alternative A, but would result in substantially fewer PV panels installed at the solar facility site. Therefore, with respect to glare, Alternative B would have a reduced glare producing surface area than Alternative A. As determined for Alternative A, the Air Force concluded that glare and glint from solar panels did not affect the performance of pilots in their training missions. Results of the Solar Glare Hazard Analysis Tool analysis for Alternative A are applicable to Alternative B because Alternative B consists of the same PV solar technology constructed within the same solar facility location. However, Alternative B would result in considerably fewer solar panels installed at the solar facility site. Thus, it is likely that Alternative B would have little to no impact involving glint/glare. As determined for Alternative A, airspace management and use impacts under Alternative B would be reduced to a less-than-significant level with implementation of the same mitigation measures as identified for Alternative A.

Biological Resources

Alternative B would result in approximately one-third the physical development and construction disturbance of Alternative A and therefore biological resources impacts would be comparably reduced in most cases. However, because this alternative would result in the same types of direct and indirect impacts to biological resources, significance conclusions for the impacts identified for each phase of Alternative B (Construction, Operation and Maintenance, and Decommissioning) would be the same as described for Alternative A. Mitigation described for Alternative A would be the same as required for Alternative B.

Cultural and Paleontological Resources

Alternative B would involve one-third the amount of ground disturbance compared to Alternative A and has the potential to adversely affect approximately 89 known cultural resources, of which 57 may be eligible for the National Register of Historic Places (NRHP). The estimated quantity of cultural resources affected by Alternative B would be substantially less than estimated for Alternative A. Alternative A has the potential to adversely affect 314 cultural resources, of which 229 may be eligible for the NRHP. Like Alternative A, Alternative B may involve excavations that extend down into older geological deposits where significant vertebrate fossil remains may be encountered. However, the reduced size of Alternative B would result in fewer excavations, which would lessen the likelihood of encountering significant paleontological resources. While impacts to cultural and paleontological resources would be reduced under Alternative B, they would not be eliminated. However, as determined for Alternative A, cultural and paleontological impacts under Alternative B would be reduced to a less-than-significant level with implementation of the same mitigation measures as identified for Alternative A.

Geology and Soils

Because Alternative B would result in approximately one-third the physical development of Alternative A, it is likely that this alternative would result in reduced impacts to geology, minerals, and soils. However, because the construction and operation of the facility would remain the same as in Alternative A, the significance conclusions for the impacts identified for each phase of Alternative B (construction, operation and maintenance, decommissioning) would be the same as described above for Alternative A. Impacts relating to geology, minerals, and soils would be less than significant.

Greenhouse Gas Emissions

Under this alternative, fewer construction-related GHG emissions would occur because less area would be developed. Alternative B would produce less renewable energy than Alternative A. However, GHG savings generated by the offset of fossil-fuel based electricity generation are expected to remain substantially greater than the total GHG emissions produced by the construction, operation, and decommissioning of the proposed project. Because Alternative B would result in development on one-third of the acreage of Alternative A and would produce one-third of the energy Alternative A would produce, Alternative B would result in offsetting approximately one-third of GHG emissions as Alternative A, for a total estimated offset of 247,978 MT CO_2e per year.

Hazardous Materials and Safety

Because Alternative B would result in approximately one-third the physical development of Alternative A, it is likely that this alternative would result in a reduced construction schedule, thereby reducing the amount of time that hazardous materials are used or stored onsite. However, because this alternative would result in use and storage of the same types of hazardous materials as Alternative A, significance conclusions for the impacts identified for each phase of Alternative B (Construction, Operation and Maintenance, and Decommissioning) would be the same as described above for Alternative A. Impacts concerning the routine transport, use, or disposal of hazardous materials; accidental release of hazardous materials; and project implementation within listed hazardous materials sites would be less than significant with mitigation incorporated.

The reduced scale of Alternative B would likely reduce the amount of time heavy machinery would be onsite during construction and decommissioning activities, thereby incrementally reducing the potential to generate sparks that could ignite a wildfire, the entire project would be located within a Moderate Fire Hazard Severity Zone as identified by the California Department of Forestry and Fire Protection State and Local Responsibility Maps. Therefore, impacts related to exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires would be the same as identified for Alternative A, that is, less than significant.

Infrastructure

Because Alternative B would result in approximately one-third of the physical development of Alternative A, it is likely that this alternative would require less water and would generate less wastewater and solid waste during construction and operation. Therefore, Alternative B would result in fewer impacts compared to Alternative A. Impacts concerning compliance with wastewater treatment requirements, construction of wastewater and stormwater facilities, expansion of water supply entitlements and disposal of solid waste would be less than significant with mitigation incorporated.

Land Use

Alternative B would be located on the same sites and would be subject to the same plans and policies as Alternative A. Because Alternative B would consist of the same land uses as Alternative A, significance conclusions for Alternative B would be the same as Alternative A. Therefore, Alternative B would be considered consistent with all applicable plans, policies, and regulations and impacts would be less than significant.

Noise

Construction-related noise associated with development of a solar generating facility from heavy equipment operation, truck deliveries, and worker commute trips would still occur with the under Alternative B. However, while impacts to sensitive receptors during construction would be similar to those discussed for Alternative A, Alternative B would only include construction of solar arrays on the western boundary of the site (along Lone Butte Road and eastern Trotter Avenue). The closest sensitive receptors to the solar facility under Alternative B would be approximately 350 feet, in comparison to 100 feet under Alternative A. Therefore, impacts to sensitive receptors located on Trotter Avenue along the eastern portion of the site would be reduced compared to Alternative A. Further, because of the reduced acreage of this alternative, construction of Alternative B would require less time than Alternative A, reducing in a reduction in construction noise. the noise level of transformers at the nearest sensitive receptor would be approximately 20 dBA, and noise from the proposed gen-tie line would be less than 42 dBA, which would be less than the 65 dBA Ldn for outdoor activity areas and 45 dBA Ldn for interior living areas, as outlined in the Kern County Municipal Code (Chapter 8.36, Noise Control). In addition, noise levels associated with operation of Alternative B would be reduced further relative to Alternative A and Alternative B would be in compliance with the Kern County Noise Ordinance. As a result, this alternative would result in a smaller workforce during construction and construction work would occur over a shorter period of time. Therefore, impacts would be reduced compared to Alternative A.

Public Services

Because Alternative B would result in approximately one-third of the physical development of Alternative A, this alternative would require fewer construction workers and operations staff. Because impacts to fire and police services are based on the number of workers in the project area, Alternative B would result in fewer impacts to fire and police services compared to Alternative A and impacts would be less than significant.

Transportation

Because Alternative B would result in approximately one-third the physical development of Alternative A, it is likely that this alternative would result in a reduced construction schedule, thereby reducing the number of construction workers and trucks, resulting in a reduction in the vehicle trip generation associated with construction. However, construction of Alternative B is considered to have similar significance conclusions for the impacts identified for each phase of Alternative B (construction, operation and maintenance, and decommissioning) as for Alternative A, requiring measures to mitigate the impacts to a less-than-significant level. Impacts under project operation and maintenance under Alternative B would be less than significant; no mitigation required.

Hydrology and Water Quality

As described, the significance conclusions for impacts to hydrology and water quality under Alternative A would be less than significant. The types of facilities installed and the general location would be the same for both Alternative A and Alternative B. Further, Alternative B would result in approximately one-third of the physical development of Alternative A; it is likely that this alternative would result in reduced impacts to hydrology and water quality. Therefore, impacts related to hydrology and water quality under Alternative B would also be less than significant.

4.6.1.2 Conclusion

Alternative B involves a smaller project and as a result reduces air quality impacts to a less-than-significant level, with mitigation. This alternative would still result in significant and unavoidable project and cumulative impacts to aesthetics because the industrial nature of the Alternative B solar facility would change the visual character of the landscape as viewed from sensitive receptors for the life of the project. In addition, Alternative B would also result in significant and unavoidable impacts to noise because Alternative B would result in a substantial temporary increase in ambient noise levels in the project vicinity during construction. However, this alternative would not realize the same magnitude of GHG emissions reductions as Alternative A.

Although this alternative would achieve some of the project objectives, it would not achieve the goals of developing facilities to produce the necessary amount of clean electricity to help achieve California's renewable energy goals to the degree associated with the proposed project. It would supply less clean, safe, renewable energy for residences and would support the economic development of Kern County, and the State of California to a lesser degree. Alternative B would also offset one-third of the GHG emissions offset by Alternative A. Alternative B would also enhance existing electrical distribution infrastructure and provide greater support to existing and future customer loads to a lesser degree than Alternative A.

4.6.2 Alternative C: No Action/No Project Alternative

Pursuant to Section 15126.6(e)(2) of the CEQA Guidelines, the No Action/No Project Alternative shall:

> *"…discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services."*

Under the No Project Alternative, the existing land uses on the project site would continue to operate as they do under existing conditions. The proposed EUL action and solar array development would not occur. Base operations at Edwards AFB would continue without benefit of the EUL or lease consideration.

4.6.2.1 Impacts Compared to Project Impacts

The following compares environmental impacts associated with the No Project Alternative to those identified for the proposed project.

Aesthetics

Under the No Project Alternative, the site would retain its current visual character. Solar panels would not be placed on the site, and therefore, no views of the site would be altered. No new lighting would be installed. Thus, no significant and unavoidable aesthetics impacts would occur by implementation of this alternative.

Air Quality

Implementation of the No Project Alternative would result in no impacts to air quality. Emissions related to solar facility construction activities would be eliminated, and short-term construction emissions would not have a cumulative impact with related projects that could violate standards. However, the beneficial impacts associated with the displacement of criteria pollutant emissions that would otherwise emanate from the existing fossil-fuel-powered generation sources would not be realized.

Agricultural Resources

Implementation of the No Project Alternative would result in no impacts to agricultural resources.

Airspace Management and Use

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions; therefore, Alternative C would result in no impacts related to consistency with the ALUCP and air safety hazards.

Biological Resources

This alternative would not result in any impacts to biological resources on the project site, including general vegetation and wildlife resources, special-status plants, special-status wildlife, and sensitive habitats.

Cultural Resources

Under the No Project Alternative, the project site would remain as is, and no ground-disturbing activities would occur, and no historical, cultural, archeological, or paleontological resources would be potentially impacted. Therefore, impacts to unknown cultural resources from the No Project Alternative would be less than the proposed project.

Geology and Soils

The No Project Alternative would not involve in-ground construction work or earth-moving activities; therefore, this alternative would not increase risks related to exposure of people or structures to geologic or seismic hazards. Thus, impacts related to geology and soils would be less than those of the proposed project.

Greenhouse Gas Emissions

Under the No Project Alternative, heavy equipment operation, truck deliveries, and trips by commuting construction workers associated with construction of the proposed project would not occur. Therefore, construction emissions that contribute to GHGs would be eliminated. However, the potential offset or displacement of GHGs from operation of the solar power generating facility, compared with traditional gas- or coal-fired power plants, would not be realized, and GHG impacts from this alternative would be greater than those of the proposed project.

Hazardous Materials and Safety

In contrast to the proposed project, the No Project Alternative would result in no impacts related to wildfire; the routine transport, use, storage, or disposal of hazardous materials; accidental release of hazardous materials; or development within listed hazardous materials sites.

Infrastructure

Under No Project Alternative, none of the components proposed under Alternative A would be built. If this alternative were implemented, there would be no changes to onsite conditions or the existing environmental setting as described above. Therefore, there would be no need for new or expanded water supplies, and no generation of wastewater or solid waste. The No Project Alternative would result in no impacts related to compliance with wastewater treatment requirements, construction of wastewater and stormwater facilities, expansion of water supply entitlements and disposal of solid waste.

Land Use

This alternative would result in no impacts related to conflicts with land use plans, policies, or regulations.

Noise

In contrast to the proposed project, the No Project Alternative would not create short-term noise from construction of a solar generating facility from heavy equipment operation, truck deliveries, and worker commute trips. The site is expected to maintain its current noise levels and impacts related to noise under this alternative would be less than those of the proposed project.

Public Services

Under this alternative, none of the components proposed under Alternative A would be built. If Alternative C were implemented, there would be no changes to onsite conditions and no need for construction or operations staff at the project site. Therefore, there would be no change in the need for fire and police services and Alternative C would result in no impacts to public services.

Transportation

The No Project Alternative would not result in impacts to transportation and traffic. In contrast with the proposed project, the No Project Alternative would not introduce construction and operational-related trips, and existing traffic patterns and volumes on nearby roadways would remain unchanged. Therefore, impacts related to transportation and traffic from the No Project Alternative would be less than those of the proposed project.

Hydrology and Water Quality

This alternative has the potential to reduce impacts to hydrology and water quality compared to the proposed project because no construction would occur and the related drainage and water quality effects would not occur. Alternative C would result in no impacts concerning hydrology and water quality.

4.6.2.2 Conclusion and Relationship to Project Objectives

The No Project Alternative would avoid the significant and unavoidable impacts associated with the proposed project and reduce impacts associated with all resource areas. As the project site would remain undeveloped, there would be no impact with regard to all resources areas.

4.6.3 Alternative D: No Ground-Mounted Utility-Solar Development – Distributed Commercial and Industrial Rooftop Solar Only

This alternative would involve development of a number of geographically distributed small to medium solar PV systems (100 kilowatts to 1 MW) on the rooftops of existing commercial and industrial facilities throughout Kern County. Depending on the type of solar modules installed and the type of tracking equipment used (if any), a similar or greater amount of acreage may be required to attain the same scale as the proposed project. Due to constraints such as space and shading, many rooftop solar PV systems would not attain the same level of efficiency per acre with respect to ground-mounted utility-scale solar PV generation. This objective would enable the generation of the same amount of electricity as the proposed project, but it would be for onsite use only and would not assist load serving entities in meeting their RPS goals. Similar to the proposed project,

this alternative would be designed to operate year-round using an array of PV modules to convert solar energy directly to electrical power. Power generated by such distributed solar PV systems would be consumed onsite by the commercial or industrial facility without requiring the construction of new electrical substation or transmission facilities.

4.6.3.1 Impacts Compared to Project Impacts

The following compares environmental impacts associated with Alternative D, the No Ground-Mounted Utility-Solar Development – Distributed Commercial and Industrial Rooftop Solar Only Alternative to those identified for the proposed project.

Aesthetics

This alternative would result in fewer aesthetics impacts compared to the proposed project. Under this alternative, undeveloped land would not be developed for solar facility uses, but rather existing developed areas would be modified. In many cases, the installation of solar panels on large rooftops would be visually unobtrusive or unnoticeable from receptors at ground level. In other circumstances, the installation of rooftop solar panels may be visible, but would not likely affect the visual character or scenic quality of an area. The exceptions may be if rooftop solar panels were proposed on historic buildings, which could affect the historic character and integrity of the buildings. Implementation of this alternative may require historic surveys and investigations to evaluate the eligibility of potentially historic structures that are over 50 years old, and either avoidance of such buildings, or incorporation of design measures to minimize impacts on historic integrity of historically significant structures to less-than-significant levels. Thus, impacts to aesthetic resources associated with this alternative would be less than those of the proposed project.

Air Quality

This alternative would likely result in fewer impacts to air quality compared to the proposed project. Even though installation of multiple small facilities over a large area is much less efficient than constructing and maintaining solar facilities on one site, no construction activities or ground disturbance would occur under this alternative. As a result, emissions related to grading activities would be eliminated and emissions from heavy equipment would be greatly reduced. Vehicular mobile-source emissions from commuting workers associated with installation of the equipment under this alternative would be similar to the construction worker trip emissions generated by the proposed project. However, construction emissions from delivery of materials and workers may be less than, similar to, or even greater than, those associated with the proposed project due to the potential distances that construction sites would be located. Thus, impacts to air quality during construction would be less than those of the proposed project. Similarly, air quality during operation would be less than those of the proposed project as maintenance activities would take place closer to population centers, reducing vehicle miles traveled.

Agricultural Resources

This alternative would likely result in fewer impacts to agricultural resources compared to the proposed project. Even though installation of multiple small facilities over a large area is much less efficient than constructing and maintaining solar facilities on one site, no construction activities or

ground disturbance would occur under this alternative. As a result, conflicts with the Williamson Act contracts, or other land currently used for agricultural purposes, would be reduced with implementation of Alternative D.

Airspace Management and Use

Alternative D does not involve the construction of a gen-tie line as proposed under Alternative A. Therefore, Alternative D would have fewer impacts involving airspace penetration than Alternative A. This alternative would install solar panels on existing structures throughout Kern County and would not be capable of communication systems interference. Alternative D involves the installation of the same solar technology as Alternative A, and would therefore have the same capability of producing glint and glare. However, the Alternative D solar panels would be installed over much smaller areas dispersed throughout Kern County, and would not form a large contiguous glare producing area as proposed under Alternative A. As determined for Alternative A, the Air Force concluded that glare and glint from solar panels did not affect the performance of pilots in their training mission. Therefore, Alternative D would have a less-than-significant impact involving glint and glare flight hazards.

Biological Resources

This alternative would result in fewer impacts to biological resources compared to the proposed project. Under this alternative, the project site would remain as is and only currently developed areas would be modified. Developed areas would be unlikely to provide habitat for threatened and endangered species. Under this alternative, there would be no potential for disturbance of sensitive or endangered species because no project construction or operational activities would occur on undeveloped lands. Therefore, potential impacts to biological resources under this alternative would be less than those of the proposed project.

Cultural Resources

This alternative would reduce potential impacts to cultural resources compared to the proposed project. Under this alternative, the project site would remain as is and only previously developed areas would be modified; there would be no potential for disturbance or damage to cultural resources (historic, archaeological, paleontological) at or near the site. If rooftop solar were proposed on historic buildings, the alternative could affect the historic character and integrity of the buildings. Implementation of this alternative would require historic surveys and investigations to evaluate the eligibility of potentially historic structures that are over 50 years old, and either avoidance of such buildings, or incorporation of design measures to minimize impacts on historic integrity of historically significant structures to less-than-significant levels. Therefore, the potential impacts to unknown cultural resources would be less than those of the proposed project.

Geology and Soils

This alternative would result in fewer impacts to geology and soils compared to the proposed project. This alternative would involve installation of solar equipment on existing structures and would not require new, in-ground construction. The installations would only minimally expose people or structures to adverse impacts resulting from geologic or seismic hazards when compared

to construction of the proposed project. Therefore, the potential impact on geology and soils from this alternative would be less than that of the proposed project.

Greenhouse Gas Emissions

Unlike the proposed project, this alternative would not include ground-disturbing activities, and would result in lower construction-related GHG emissions from operation of construction vehicles, trucks and other heavy grading and site preparation equipment. However, the GHG emissions from delivery of materials and workers may be similar to, or even greater than, those associated with the proposed project due to the potentially greater distances that construction sites would be located. Therefore, construction emissions that contribute to GHGs would be similar to those of the proposed project. During project operation, the potential offsets or displacement of GHGs, compared to traditional gas- or coal-fired power plants, would be realized to the same degree as they would under the proposed project because of similar renewable power generating potential. Thus, GHG impacts from this alternative would be similar to those of the proposed project.

Hazardous Materials and Safety

In contrast to the proposed project, under this alternative, the project site would as is and no construction activities would occur that could potentially disturb hazardous materials in the soil. The installation of rooftop solar equipment on existing, disturbed sites, may involve the minimal use of chemicals, including fuels, solvents, paint, lubricants, and other potentially hazardous materials. However, as with the proposed project, standard BMPs would ensure that exposure to potentially hazardous materials used or found onsite would be reduced or minimized. Therefore, the potential impact from hazards and hazardous materials would be less than that of the proposed project.

Infrastructure

Under this alternative, solar equipment would be installed on existing structures and would not require new, in-ground construction. Therefore, there would be no need for new or expanded water supplies, and no generation of wastewater or solid waste. Therefore, the potential impact would be less than that of the proposed project.

Land Use

Under this alternative, solar equipment would be installed on existing structures and would not require new, in-ground construction. Construction would take place through the local building and planning processes and would therefore be consistent with current zoning as well as existing land use plans, policies, and regulations. Therefore, this alternative would result in similar less-than-significant impacts as the proposed project.

Noise

Under this alternative, the project site would remain as is and rooftops of commercial and industrial buildings in developed areas that may be adjacent to noise sensitive land uses would be modified. No construction activities or ground disturbance would occur at the project site. As a result, noise related to these activities would be eliminated. However, noise related to construction activities

could occur adjacent to residences and would likely result in noise impacts to a greater number of sensitive receptors within the developed areas. Also, vehicular noise from commuting workers associated with installation of the equipment by this alternative would be similar to the construction worker trips generated by the proposed project, but would likely occur near sensitive receptors and would be spread out over a larger area and have the potential to impact greater numbers of sensitive receptors. As a result, potential impacts from this alternative would be greater than those of the proposed project.

Public Services

This alternative would not involve construction on a new site that would require increased demand of public services, but would utilize structures that are currently being served by existing public services. This alternative would reduce impacts on public services compared to the proposed project.

Transportation and Traffic

This alternative would require a similar number of vehicular trips to transport and install the solar panels. However, the trips would be more dispersed and would not congregate in one location, thereby affecting the performance of surrounding roadways. This alternative would have nominal effects on transportation and traffic, and impacts would be less than those of the proposed project.

Hydrology and Water Quality

Under this alternative, drainage patterns on the project site would not be altered, and potential water quality impacts on the project site would not occur. There would be little to no increase in impervious surface. Potential impact on hydrology and water quality from this alternative would be reduced compared to the proposed project.

4.6.3.2 Conclusion and Relationship to Project Objectives

This alternative would avoid significant and unavoidable impacts to project-level and cumulative aesthetics, and air quality that would occur as a result of implementation of the proposed project. This alternative would also result in potentially reduced impacts to biological resources, cultural resources, geology and soils, hazards and hazardous materials, public services, traffic and utilities, water resources, and service systems. However, it would result in greater impacts to noise because construction may take place in closer proximity to sensitive receptors. This alternative would achieve most of the project objectives, such as offsetting energy generated from fossil fuels and helping to achieve California's renewable energy goals, while investing in Kern County and creating jobs; however, there are a number of drawbacks to this alternative that include, but are not limited to:

- The system would not likely be built out within a timeframe that would be similar to that of the proposed project.
- Given the distributed nature of such a network of facilities, construction, management, and maintenance would not be as efficient, and total capital costs would likely be higher.

- The applicant does not have immediate control or access to potential urban sites that could accommodate facilities to generate industrial-scale solar power.
- A distributed system of the scale of the project would be cost-prohibitive.

Given the size of the proposed project (assuming a scale similar to full build out of the 4,000-acre Alternative A), the project objectives, and the need to arrange a suitable assemblage of participating commercial and industrial properties, it is impractical and infeasible to propose a distributed generation project of this type and still proceed within a reasonably similar timeframe.

4.7 Environmental Comparison of Alternatives

Table 4-2 presents a comparison of the differences in impacts among the alternatives described in above. The information in Table 4-2 is derived from the detailed discussions of the existing environmental conditions and environmental consequences in Chapter 3 of this EIS/EIR, and the technical studies and other material presented in the appendices.

TABLE 4-2
CEQA COMPARISON OF ALTERNATIVES

Environmental Resource	**Alternative A:** Proposed Project (Up to 4,000-acre Solar PV Project)	**Alternative B:** Reduced Scale Project (1,500-acre Solar PV Project)	**Alternative C:** No Action / No Project	**Alternative D:** Rooftop Solar
Aesthetics	Significant and Unavoidable	Significant and Unavoidable Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Agricultural Resources	Less than Significant	Less than Significant Same as A	No Impact Reduced Compared to A	No Impact Reduced Compared to A
Air Quality	Significant and Unavoidable	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Airspace Management and Use	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Biological Resources	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Cultural & Paleontological Resources	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Geology, Minerals, and Soils	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Greenhouse Gas Emissions	Less than Significant	Less than Significant Reduced Compared to A	Less than Significant Increased Compared to A	Less than Significant Reduced Compared to A
Hazards and Hazardous Materials	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Infrastructure	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A

Environmental Resource	**Alternative A:** Proposed Project (Up to 4,000-acre Solar PV Project)	**Alternative B:** Reduced Scale Project (1,500-acre Solar PV Project)	**Alternative C:** No Action / No Project	**Alternative D:** Rooftop Solar
Land Use	Less than Significant	Less than Significant Same as A	No Impact Reduced Compared to A	Less than Significant Similar to A
Noise	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Increased Compared to A
Public Services	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Transportation	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A
Hydrology and Water Quality	Less than Significant	Less than Significant Reduced Compared to A	No Impact Reduced Compared to A	Less than Significant Reduced Compared to A

4.8 Environmentally Superior Alternative

As presented in the comparative analysis above, and as shown in Table 4-2, there are a number of factors in selecting the environmentally superior alternative. An EIR must identify the environmentally superior alternative to the proposed project.

Alternative C, the No Action/No Project Alternative, would be environmentally superior to the proposed project on the basis of its minimization or avoidance of physical environmental impacts. Section 15126.6(e)(2) of the CEQA Guidelines states that if the No Project Alternative is found to be environmentally superior, “the EIR shall also identify an environmentally superior alternative among the other alternatives.”

Alternative B, the 1,500-Acre EUL Alternative, would result in incrementally fewer impacts than the proposed project (Alternative A) with the exception of GHG emissions. GHG impacts would be greater under Alternative B, since the potential offset or displacement of GHGs from operation of the solar generating facility, compared with traditional gas- or coal-fired power plants, would not be realized to the same extent. Alternative B would reduce the solar facility footprint by approximately 62.5 percent from Alternative A and would therefore provide approximately 37.5 percent of the GHG emission offsets described for the proposed project. Due to this reduction in GHG emission offsets, GHG impacts under Alternative B would be greater than the proposed project. Even though impacts would be reduced in comparison to the proposed project, this alternative would result in significant and unavoidable impacts to aesthetics and air quality.

CHAPTER 5

Consequences and Other CEQA and NEPA Statutory Requirements

5.1 Environmental Effects Found to Be Less Than Significant

Section 15128 of the CEQA Guidelines requires that an EIR "contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR."

Kern County has engaged the public in scoping of the environmental document. Comments received during scoping have been considered in the process of identifying issue areas that should receive attention in the EIR. The contents of this EIS/EIR were established based on a notice of preparation (NOP) prepared in accordance with the CEQA Guidelines and on public and agency input received during the scoping process (see Appendix A). Issues that were found to have no impact or less than significant impacts during preparation of the NOP do not need to be addressed further in this EIS/EIR. Based on the findings of the NOP and the results of scoping, a determination was made that the following resource areas would not be significantly impacted by the proposed project, and are therefore not addressed in this EIS/EIR:

- Population and Housing
- Recreation

For all other resource areas, this EIS/EIR contains a comprehensive analysis of potential environmental impacts.

After further study and environmental review in this EIS/EIR, project-level impacts in the following areas would be less than significant:

- Agricultural Resources
- Airspace Management and Use
- Environmental Justice
- Geology, Minerals, and Soils
- Greenhouse Gas Emissions (project and cumulative)
- Land Use and Planning (project)
- Socioeconomics

After further study and environmental review in this EIS/EIR, project-level impacts in the following areas would be reduced to less-than-significant levels with mitigation measures:

- Biological resources (project and cumulative)
- Paleontological resources (project and cumulative)
- Hazards and hazardous materials (project and cumulative)
- Infrastructure (project and cumulative)
- Land use and planning (cumulative)
- Public services (project and cumulative)
- Traffic and transportation (project and cumulative)
- Hydrology and water quality (project and cumulative)

5.2 Significant Environmental Effects that Cannot Be Avoided

Section 15126.2(b) of the CEQA Guidelines requires that the EIS/EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. Potential environmental effects of the proposed project and proposed mitigation measures are discussed in detail in Chapter 4, *CEQA Alternatives*.

Impacts in the following areas, shown in **Table 5-1**, would be significant and unavoidable, even with the incorporation of feasible mitigation measures that attempt to reduce impacts to the extent feasible.

TABLE 5-1
SUMMARY OF SIGNIFICANT AND UNAVOIDABLE IMPACTS OF THE PROJECT

Resources	Project Impacts	Cumulative Impacts
Aesthetics (project and Cumulative)	**Impact 3.1-1:** The proposed project could substantially degrade the existing visual character or quality of the site and its surroundings resulting in a **significant and unavoidable impact**.	The project's contribution to the visible industrialization of the desert landscape would constitute a **significant and unavoidable visual impact** when considered in the context of existing cumulative conditions and reasonably foreseeable projects, both within the immediate project viewshed and in a somewhat broader context that encompasses the project and surroundings as a whole.
Air Quality (project and Cumulative)	**Impact 3.2-1**: The project would conflict with or obstruct implementation of the applicable air quality plan resulting in a **significant and unavoidable impact**. **Impact 3.2-2**: The proposed project could violate an applicable air quality standard or contribute substantially to an existing or contribute substantially to an existing or projected air quality violation resulting in a **significant and unavoidable impact**. **Impact 3.2-3:** Construction and operation of the proposed project could result in a cumulatively considerable net increase of criteria pollutants for which the project region is nonattainment under applicable federal or state ambient air quality standards resulting in a **significant and unavoidable impact**.	Construction of the proposed project with other cumulative projects would result in a net increase of criteria pollutants for which the project region is nonattainment under applicable federal and state ambient air quality standards. This would result in a **significant and unavoidable impact** during construction**.**

5.3 Irreversible Impacts

The NEPA Guidelines (40 CFR 1502.16) and CEQA Guidelines Section 15126.2 require a discussion of any irreversible or irretrievable commitments of resources that would be caused by implementation of the proposed project, or one of the action alternatives; the relationship between short-term uses and long-term productivity of the environmental; and any growth-inducing impacts.

Resources irreversibly or irretrievably committed to a proposed action are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, aggregate, and other natural resources. These resources are considered irretrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another irreversible or irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Development of the project would require a permanent commitment of natural resources resulting from the direct consumption of fossil fuels, construction materials, the manufacture of new equipment, some of which would not be recyclable at the end of the project's useful lifetime, and energy required for the production of materials. After 35 years, the project could be decommissioned and the leased Air Force land would be returned to the Air Force for another land use in accordance with regulations in effect at that time. Upon completion of the 35-year lease, the owner may extend the enhanced-use lease (EUL) with the Air Force or decommission and remove the system and its components. A collection and recycling program would be executed to promote recycling of project components and minimize disposal in landfills. However, full site recovery to its pre-project state may not be possible given the 35-year lifespan of the project and the many unknown variables that could affect the site. As part of the EUL agreement, the lessee would, at no cost to the government, regrade the leased land to the extent reasonably necessary to smoothly conform the disturbed contours of the surface to minimize erosion, and, to the extent feasible, the lessee shall revegetate disturbed areas of the leased land in a manner compatible with undisturbed vegetation. Currently, the project site is primarily undeveloped and contains natural vegetation generally characteristic of Mojave Desert scrub habitats.

The project is a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over the 35-year life of the project, this renewable energy project would contribute incrementally to the reduction in demand for fossil fuels used to generate electricity, thereby resulting in a positive effect of the commitment of nonrenewable resources to the project.

5.4 Significant Cumulative Impacts

According to Section 15355 of the CEQA Guidelines, the term cumulative impacts "refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Individual effects that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearby projects, including newly proposed projects, the effects could be cumulatively considerable.

This EIS/EIR has considered the potential cumulative effects of the proposed project. Impacts for the following issue areas have been found to be cumulatively considerable and could not be reduced to a less-than-significant level with mitigation:

- Aesthetics
- Air Quality

5.5 Growth Inducement

The General Plan of Kern County recognizes that certain forms of growth are beneficial, both economically and socially. Section 15126.2(d) of the CEQA Guidelines provides the following guidance on growth-inducing impacts: a project is identified as growth-inducing if it "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

Growth inducement can be a result of new development that requires an increase in employment, removes barriers to development, or provides resources that lead to secondary growth. With respect to employment, the proposed project would not induce substantial growth because it would temporarily employ as many as 550 people during construction, most of whom are expected to be based in the nearby areas of Rosamond, Lancaster, or other local cities. The total amount of staff required for operation and maintenance of the solar facility would be determined after the facility design is finalized. Typically, it is expected to be staffed by up to 10 full-time personnel for operation, maintenance, and security of the solar facility. Therefore, the project would not result in a large increase in long-term employment that would significantly induce growth.

While the project would contribute to energy supply, which is one factor of population growth, the development of power infrastructure is a response to increased market demand and statewide regulatory mandates, including the Renewable Portfolio Standard mandate, and is not a factor that induces new growth. Kern County planning documents already permit and anticipate a certain level of growth in the area of the project site, along with attendant growth in energy demand. It is this anticipated growth that drives energy-production projects, not vice-versa. The project would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth beyond reasonable population forecasts assumed in the County's General Plan. Therefore, any link between the project and growth in Kern County would be speculative.

In *Kerncrest Audubon Society v. Los Angeles Department of Water and Power*, the analysis of growth-inducing effects contained in the EIR for the Pine Tree Wind Development project was challenged. Plaintiffs argued that the discussion was too cursory to provide adequate information about how additional electricity generated by the project would sustain further growth in the Los Angeles area. The court held that the additional electricity that the project would produce was intended to meet the current forecast of growth in the Los Angeles area. As such, the wind development project would not cause growth, and so it was not reasonable to require a detailed analysis of growth-inducing impacts. In addition, EIRs for similar energy projects have contained similarly detailed analyses of growth-inducing impacts. Their conclusions that increasing the energy supply would not create growth has been upheld, because: (1) the additional energy would be used to ease the burdens of meeting existing energy demands within and beyond the area of the

project; (2) the energy would be used to support already-projected growth; or (3) the factors affecting growth are so multifarious that any potential connection between additional energy production and growth would necessarily be too speculative and tenuous to merit extensive analysis. Thus, as has been upheld in the courts, this level of analysis is sufficient to inform the public and decision makers of the growth-inducing impacts of the project.

5.6 Energy Consumption

CEQA Section 21100(b) requires that an EIR discuss and consider mitigation measures for the potential energy impacts of proposed projects, with emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides guidance for assessing the significance of potential energy impacts. It provides three means of achieving its ultimate goal of conserving energy:

1. Decreasing overall per capita energy consumption
2. Decreasing reliance on natural gas and oil
3. Increasing reliance on renewable energy sources

Consistent with Appendix F of the CEQA Guidelines, potential environmental impacts evaluated in this section include:

1. The project's energy requirements by amount and fuel type for each stage of the project including construction, operation, maintenance, and decommissioning
2. The effects of the project on energy resources, local and regional energy supplies, and requirements for additional capacity
3. The effects of the project on peak and base period demands for electricity and other forms of energy
4. The degree to which the project complies with existing energy standards
5. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives

5.6.1 California's Energy System

5.6.1.1 Electricity

The production of electricity requires the consumption or conversion of energy resources including water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in California, 49.9 percent is generated by natural gas-fired power plants, 0.16 percent is generated by coal-fired power plants, 12.3 percent comes from large hydroelectric dams, and 9.6 percent comes from nuclear power plants. The remaining 27.9 percent in-state total electricity production is supplied by renewable sources including solar and wind power (CEC, 2016).

Natural gas supplies the largest portion of California's electricity market; natural gas-fired power plants in California meet approximately 37 percent of the in-state electricity demand. Most of the natural gas consumed in California comes from the Southwest, the Rocky Mountains, and Canada, while the remainder is produced in California.

California's Renewables Portfolio Standard (RPS) requires retail electricity sellers, including publicly owned utilities (POUs), to procure 33 percent of retail sales per year from eligible renewable sources by 2020. Currently, California receives 27.9 percent of its electricity from renewable sources including small hydroelectric generation (2.3 percent), biomass (3 percent), geothermal (5.8 percent), solar (10 percent), and wind (6.8 percent) (CEC, 2016). California leads the nation in electricity generation from non-hydroelectric renewable energy sources including geothermal power, wind power, fuel wood, landfill gas, and solar power. The state is also a leading generator of hydroelectric power (USEIA, 2017). The electricity generated and used in California is distributed via a network of transmission and distribution lines commonly called the power grid.

5.6.1.2 Petroleum

Approximately 36 percent of California's petroleum supply comes from in-state sources while 52 percent is imported from foreign sources, and 12 percent is imported from Alaska (CEC, 2016). Crude oil is moved throughout California through a network of pipelines that carry it from both on-shore and off-shore oil wells to refineries located in the San Francisco Bay area, Los Angeles area, and the Central Valley (USEIA, 2016a). Currently, 17 petroleum refineries operate in California (USEIA, 2016a).

In 2014, California consumed approximately 629.5 million barrels (26.4 billion gallons) of petroleum (USEIA, 2016a). As of December 31, 2015, California has 2,845 million barrels of crude oil left in the state's reserves (USEIA, 2016a).

5.6.2 Local Energy Systems

5.6.2.1 Southern California Edison

Electrical services are provided to the project site by Southern California Edison (SCE). SCE provides electricity to approximately 15 million people, 180 incorporated cities, 15 counties, 5,000 large businesses, and 280,000 small businesses throughout its 50,000-square-mile service area (SCE, 2016)

SCE produces and purchases its energy from a mix of conventional and renewable generating sources. **Table 5-2** shows the electric power mix that was delivered to SCE's retail customers in 2014.

SCE provides electricity in the vicinity of the project site but no electricity currently is available onsite. If distribution to the site is determined to be feasible, electric service could be extended to the site via a distribution power line that would be constructed, owned, and operated by SCE, and could replace some of the fuel use described below in Section 5.6.4 by replacing the use of a construction trailer generator.

TABLE 5-2
ELECTRIC POWER MIX DELIVERED TO SCE RETAIL CUSTOMERS IN 2014

Energy Resources	2014 SCE Power Mix	2013 CA Power Mix [A]
Eligible Renewable		
-- Biomass & waste	1%	3%
-- Geothermal	9%	4%
-- Small hydroelectric	0%	1%
-- Solar	4%	2%
-- Wind	10%	9%
Coal	0%	8%
Large Hydroelectric Natural Gas	3%	8%
Natural Gas	27%	44%
Nuclear	6%	9%
Other	0%	0%
Unspecified sources of power [B]	40%	12%
TOTAL	**100%**	**100%**

[A] Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year.
[B] "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

SOURCE CEC, 2014.

5.6.2.2 Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power (LADWP) provides electricity to approximately 4 million people in a service area covering 465 square miles and operates the Barren Ridge-Rinaldi transmission line, to which the project may interconnect (LADWP, 2016a).

LADWP produces and purchases its energy from a mix of conventional and renewable generating sources. **Table 5-3** shows the electric power mix that was delivered to LADWP's retail customers in 2016.

TABLE 5-3
ELECTRIC POWER MIX DELIVERED TO LADWP RETAIL CUSTOMERS IN 2011

Power Source	Percent (%) of Total Power Mix Delivered
Natural Gas	25
Nuclear	10
Coal	37
Large Hydroelectric	3
Unspecified Sources	4
Eligible Renewables (21%):	
Geothermal	2
Wind	11
Biomass and Waste	4
Small Hydroelectric	1
Solar	3

SOURCE: LADWP, 2016b

5.6.3 Energy Conservation Standards

5.6.3.1 State

California Senate Bill 350

California Senate Bill 350 is the most recent update to the state's RPS requirements, and requires publicly owned utilities and retail sellers of electricity in California to procure 33 percent of their electricity sales from eligible renewable sources by 2020, and 50 percent by the end of 2030.

Title 24, Part 6 of the California Code of Regulations is the California Energy Code, a section of the California Building Code that includes standards mandating energy conservation measures in new construction for heating, cooling, ventilation, water heating, and lighting. Since its establishment in 1977, these standards (along with standards for energy efficiency in appliances) have contributed to a reduction in electricity and natural gas usage and costs in California. The California Energy Commission produces, and the California Building Standards Commission subsequently adopts updates to these standards every 3 years to incorporate new energy efficiency technologies.

5.6.3.2 Local

The following goals and policies identified in the Energy Element of the Kern County General Plan are relevant to this analysis (Kern County, 2009). The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Kern County General Plan Chapter 5: Energy Element

Section 5.4.5 Solar Energy Development

Goal

Goal 1: Encourage safe and orderly commercial solar development.

Policies

Policy 1: The County shall encourage domestic and commercial solar energy uses to conserve fossil fuel and improve air quality.

Policy 3: The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

Policy 4: The County should encourage solar development in the desert and valley regions previously disturbed, and discourage development of energy projects on undisturbed land supporting state or federally protected plant and wildlife species.

Section 5.4.7 Transmission Lines

Goal

Goal 1: To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effects.

Policies

Policy 1: The County should encourage the development and upgrading of transmission lines and associated facilities (e.g., substations) as needed to serve Kern County's residents and access the County's generating resources, insofar as transmission lines do not create significant environmental or public health and safety hazards.

Policy 2: The County shall review all proposed transmission lines and their alignments for conformity with the Land Use, Conservation, and Open Space Element of this General Plan.

Policy 3: In reviewing proposals for new transmission lines and/or capacity, the County should assert a preference for upgrade of existing lines and use of existing corridors where feasible.

Policy 5: The County should discourage the siting of above-ground transmission lines in visually sensitive areas.

Policy 6: The County should encourage new transmission lines to be sited/configured to avoid or minimize collision and electrocution hazards to raptors.

5.6.4 Energy Consumption Impacts of the Project

5.6.4.1 Energy Requirements and Effects on Local and Regional Energy Supplies

The following analysis includes energy consumption values that are based on estimates of the project's projected energy requirements through construction, operation and maintenance, and decommissioning.

Direct energy use would include the consumption of petroleum fuel for vehicles and the use of electricity for equipment and facilities. Indirect energy use includes the energy required to make the materials and components used in construction of the project. This includes energy used for extraction of raw materials, manufacturing, and transportation associated with manufacturing. As described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, all recyclable wastes generated during construction, operation and maintenance, and decommissioning, including photovoltaic panels, would be recycled at appropriate facilities. Through the recycling of these materials, the project would achieve the maximum attainable recycling of depletable resources in compliance with 42 U.S. Code (USC) Section 4331(b)(6).

Construction

Although construction-related energy consumption would occur only temporarily during the construction period, it would represent irreversible consumption of finite natural energy resources. Construction-related energy expenditures would include direct and indirect uses of energy in the form of fuel (typically, diesel fuel for trucks and onsite equipment, and gasoline for commuter vehicles). **Table 5-4** shows the estimated petroleum during construction. There are currently no energy-consuming activities at the site; therefore, all energy consumption during project construction would exceed the baseline.

TABLE 5-4
CONSTRUCTION FUEL CONSUMPTION SUMMARY

	Gallons	
Year	**Diesel**	**Gas**
Solar and Gen-tie Construction	300,388	231,860
Architectural Coating	0	0
Total	**300,387**	**231,860**
Average Annual	75,096	57,965

SOURCE ESA 2018

Temporary power for solar facility construction would be provided by mobile diesel-driven generator sets and/or by temporary electrical service from the local power provider. The diesel generators would be registered with the California Air Resources Board's Portable Equipment Registration Program.

Operation and Maintenance

The solar facility would require power for the electrical enclosures, substation equipment, tracker motors, service buildings, warehouses, and plant lighting. The energy-consuming activities of permanent employees would include daily trips to the site, site maintenance (roads and solar panel washing), and site security monitoring. **Table 5-5** shows the comparison of existing fuel consumption to estimates of the project's projected annual operational fuel consumption.

TABLE 5-5
ANNUAL OPERATIONAL FUEL CONSUMPTION

	Gallons	
	Diesel	**Gas**
Existing	0	0
Proposed (2020)	1,658	9,281

SOURCE ESA 2018

The amount of petroleum consumed during operation would be substantially less than the amount consumed during construction but would still be the primary source of the energy consumed onsite. Compared to statewide annual petroleum fuel consumption, the project's use of each of these fuel types would represent less than one-thousandth of one percent.

During operation and maintenance, onsite electricity needs would be met by project-generated electricity or supplied by the local power provider. Substation protection equipment would be supplied by DC power provided by each substation control building's battery room. There may also be emergency generators located onsite as a backup source; however, such emergency generators may be needed only during construction and could be removed during operation.

The petroleum fuel and electrical energy consumed during operation and maintenance would exceed baseline conditions but still would be considered minimal, and would not be inefficient, wasteful, or unnecessary. Additionally, project operation would have a beneficial effect on the electricity supply to the grid and would help decrease reliance on coal power.

Decommissioning

During decommissioning, most of the energy consumed onsite is typically used by the petroleum-fueled construction vehicles and equipment used to dismantle the project. If electricity were required, it would be sourced from any still-operational panels, or from onsite petroleum-fueled generators. The exact amounts of diesel and gasoline required for decommissioning are unknown. However, the amount of energy required to decommission the facility would not be significantly different than the amount of energy that would be consumed each year during construction. As described above, compared to statewide petroleum fuel consumption, the project's use of these fuel types would be minimal.

Although the energy consumed during decommissioning would be greater than the baseline amount (zero), it would be a minimal and temporary use of energy.

The energy consumed during the lifetime (including decommissioning) of the project would be less than the energy generated throughout the lifetime of project. Overall, the project would produce a net energy gain. However, much of the project's energy consumption would be in the form of petroleum fuels, whereas the energy it would produce would be in the form of electricity. These energy types are generally not interchangeable (i.e., transportation primarily uses diesel and gasoline, while air conditioning and appliances typically use electricity). Therefore, the project would result in a net consumption of liquid petroleum fuels and a net supply of electricity to the regional grid. Additionally, decommissioning would return the project site to its baseline conditions in which no energy would be supplied or used onsite.

Summary

The energy consumed during each project phase would be greater than the baseline value used at the site. However, energy used during each phase of the project would be necessary to implement the project, and none of the proposed energy-consuming activities associated with each phase would be a wasteful, inefficient, or unnecessary use of energy. After the first phase of the project is operational, and throughout operation, the project would be a net electricity producer, and would have a beneficial effect during peak electricity demand periods, particularly on warm, sunny days when demand for air-conditioning increases and project output is at its highest. Additionally, decommissioning would restore the site to baseline conditions, making it a non-energy consuming site. The project would not have a significant impact with respect to fuel and electrical energy requirements or on local or regional energy supplies.

5.6.4.2 Compliance with Energy Standards

Construction and Decommissioning

During construction and decommissioning, the developer would recycle all recyclable materials at appropriate facilities, and would therefore be in compliance with 42 USC Section 4331(b)(6). Additionally, the use of energy during construction and decommissioning would not be unnecessary, wasteful, or inefficient because it would be necessary for the completion of the project and because construction and decommissioning equipment would comply with all applicable fuel economy and energy efficiency standards. No adverse impact on efforts to achieve existing energy standards would result.

Operation and Maintenance

The project would use solar energy technology, an eligible renewable energy resource that meets criteria set forth in California Public Utilities Code Section 399.12, Public Resources Code Section 25741, and *Renewables Portfolio Standard: Eligibility Guidebook* (2017

). The permitting process for the project would require that the project comply with all applicable policies and standards. Thus, the project would comply with, directly support, and further efforts toward achieving existing energy standards. No adverse impact on efforts to achieve existing energy standards would result.

5.6.4.3 Efficient Use of Transportation Fuels

Construction and Decommissioning

Impact 5-1: The project could result in an inefficient, wasteful, and/or unnecessary use of energy for transportation of materials and worker commutes. (*Less than Significant with Mitigation Incorporated*)

Construction and decommissioning of the project would consume diesel and gasoline as described above, some of which would be used for transportation of materials and worker commutes. Although the overall use of energy for each phase of the project is not considered inefficient, wasteful, or unnecessary, the specific use of diesel and gasoline for worker commutes and haul trips would be considered a significant adverse effect if each worker arrives at the site in a separate vehicle and haul trips are not coordinated to the extent feasible to reduce transportation energy consumption. The site is not accessible by public transportation; therefore, it is likely that workers would travel in single-occupancy vehicles to the site. However, Mitigation Measure MM 5-1a for the solar facility portion of the project and Mitigation Measure MM 5.1-1b for the gen-tie portion of the project would reduce the project's construction- and decommissioning-related impacts on transportation energy use to a less than significant level by requiring the developer to facilitate efficient means of transportation and use of fuels by employees and haul trucks through limiting idling, implementing ridesharing strategies, and planning haul trips as efficiently as is feasible through the implementation of a Transportation Energy Management Plan.

Operation and Maintenance

Operation- and maintenance-related use of transportation energy would consist of employee commutes, maintenance-related vehicle use onsite, and any necessary hauling of supplies and wastes generated during this phase. Because of the low number of employees and the limited need for deliveries and waste hauling throughout the operational period, it is anticipated that transportation energy consumption would be low. The use of transportation energy for maintenance-related trips would be necessary to the maintenance of the solar plant and related facilities. Therefore, during operation and maintenance, the use of transportation energy would not be considered inefficient, wasteful, or unnecessary.

Mitigation Measures

Solar Facility Mitigation Measures

MM 5-1a: Transportation Energy Management Plan. The developer shall develop and implement a construction- and decommissioning-phase Transportation Energy Management Plan in consultation with Kern County and Edwards AFB to reduce construction- and decommissioning-related transportation energy consumption. The plan shall include but not be limited to the following measures:

1. Require that onsite equipment and vehicle operators minimize equipment and vehicle idling time either by shutting equipment off when not in use or by limiting idling time to a maximum of 5 minutes.

2. Designate a Transportation Energy Manager (TEM) to coordinate ridesharing by construction and decommissioning employees. The TEM shall encourage carpooling by posting commuter ride sign-up sheets and maintaining and posting an employee home zip code map.
3. Provide priority parking onsite for vehicles with two or more passengers.
4. When feasible, arrange for a single construction vendor who makes deliveries for several items.
5. Plan construction delivery and waste hauling routes to eliminate unnecessary trips.
6. The plan shall be submitted to Kern County and to Edwards AFB for review and approval prior to the start of construction.

Gen-tie Mitigation Measures

MM 5-1b: Transportation Energy Management Plan. The developer shall develop and implement a construction- and decommissioning-phase Transportation Energy Management Plan in consultation with Kern County to reduce construction- and decommissioning-related transportation energy consumption. The plan shall include but not be limited to the following measures:

1. Require that onsite equipment and vehicle operators minimize equipment and vehicle idling time either by shutting equipment off when not in use or by limiting idling time to a maximum of 5 minutes.
2. Designate a TEM to coordinate ridesharing by generation tie-line construction and decommissioning employees. The TEM shall encourage carpooling by posting commuter ride sign-up sheets and maintaining and posting an employee home zip code map.
3. Provide priority parking onsite for vehicles with two or more passengers.
4. When feasible, arrange for a single construction vendor who makes deliveries for several items.
5. Plan construction delivery and waste hauling routes to eliminate unnecessary trips.
6. The plan shall be submitted to Kern County Planning and Natural Resources Department for review and approval prior to the start of generation tie-line installation.

Level of Significance after Mitigation

Impacts would be less than significant.

CHAPTER 6
Organizations and Persons Consulted

6.1 Federal

- Federal Aviation Administration
- Naval Air Weapons Station China Lake
- U.S. Air Force
- U.S. Army
- U.S. Army Corps of Engineers
- U.S. Bureau of Land Management
- U.S. Department of Agriculture, Natural Resource Conservation Service
- U.S. Environmental Protection Agency Region IX
- U.S. Fish and Wildlife Service
- U.S. Forest Service, Pacific Southwest Region
- U.S. Marine Corps
- U.S. Navy
- U.S. Postal Service

6.2 Federally Recognized Tribes

- Big Pine Paiute Tribe of the Owens Valley
- Bishop Paiute Tribe
- Chemehuevi Indian Tribe
- Colorado River Indian Tribes (CRIT)
- Fort Independence Paiute Indians
- Fort Mojave Indian Tribe
- Las Vegas Paiute Tribe
- Lone Pine Paiute-Shoshone Tribe
- Moapa Band of Paiutes
- Morongo Band of Mission Indians

- San Manuel Band of Mission Indians
- Santa Rosa Rancheria Tachi-Yokut Tribe
- Tejon Indian Tribe
- Timbisha Shoshone Tribe
- Tule River Tribe

6.3 State of California

- California Department of Conservation
- California Department of Fish & Wildlife
- California Department of Resources, Recycling and Recovery
- California Department of Water Resources, San Joaquin District
- California Energy Commission
- California Highway Patrol
- California Public Utilities Commission
- California Regional Water Quality Control Board, Lahontan Region
- California State Clearinghouse
- California State Lands Commission
- California State University, Bakersfield
- Caltrans District 6
- Caltrans District 9
- State Water Resources Control Board, Division of Drinking Water

6.4 Regional and Local

- Antelope Valley-East Kern Water Agency
- California City Planning Department
- Chumash Council of Bakersfield
- City of Arvin
- City of Bakersfield Planning Department
- City of Bakersfield Public Works Department
- City of Delano Planning Department
- City of Maricopa
- City of McFarland
- City of Ridgecrest

- City of Shafter
- City of Taft
- City of Tehachapi
- City of Wasco
- Eastern Kern Air Pollution Control District
- Inyo County Planning Department
- Kern Council of Governments
- Kern County Administrative Officer
- Kern County Agriculture Department
- Kern County Board of Supervisors
- Kern County Engineering, Surveying & Permit Services
- Kern County Environmental Health Services Department
- Kern County Fire Department
- Kern County Library, Beale Branch
- Kern County Library, Rosamond Branch
- Kern County Planning and Natural Resources Department
- Kern County Public Works Department
- Kern County Sheriff's Department
- Kern County Superintendent of Schools
- Kern County Water Agency
- Kern High School District
- Kern Valley Indian Council
- Kings County Planning Agency
- Los Angeles County Regional Planning Department
- Los Angeles Department of Water and Power
- Metropolitan Water Districts of Southern California
- Mojave Chamber of Commerce
- Native American Heritage Council of Kern County
- Pacific Gas and Electric
- Recurrent Energy
- San Bernardino County Planning Department
- San Francisco Public Utilities Commission, Energy Division
- San Luis Obispo County Planning Department

- Santa Barbara County Resource Management Department
- Southern California Edison
- Tulare County Planning Development Department
- Ventura County Resource Management Agency Planning Division

CHAPTER 7
Response to Comments

Introduction

This chapter presents all written or transcribed public comments received concerning the Draft EIS/EIR during the public comment period, which started on June 7, 2019 and extended to August 30, 2019. Also included are written responses to all public comments presented herein. Clarifications, corrections, or minor revisions have been made to the Draft EIS/EIR and are presented as strikeout or underlined text throughout this Chapter, and have been integrated throughout the Final EIS/EIR with no stricken-out or underlined text.

Response to Comments

A list of agencies and interested parties who have commented on the Draft EIS/EIR is provided below. A copy of each numbered comment letter and a lettered response to each comment are provided following this list.

Federally Recognized Tribes

Letter 1 – San Manuel Band of Mission Indians

Federal Agencies

Letter 2– U.S. Environmental Protection Agency

State Agencies

Letter 3 – California Department of Conservation Division of Oil, Gas, and Geothermal Resources

Letter 4 – California Water Boards, Lahontan Regional Water Quality Control Board

Local Agencies

Letter 5 – Kern County Public Works Department, Administration and Engineering Division

Letter 6 – Mojave Air & Space Port

Letter 7 – Eastern Kern Air Pollution Control District

Letter 8– Antelope Valley-East Kern Water Agency

Interested Parties

Letter 9 – Roy Woosley

Letter 10 – Luke Brand

Letter 11 – Law Offices of John A. Belcher

Public Hearing Transcripts

Transcript 1 – Public Hearing, Wednesday, June 26, 2019

Transcript 2 – Public Hearing, Thursday, June 27, 2019

Revisions to the Draft EIS/EIR

Section 3.3, Air Quality

Subsection 3.3.1.2, Page 3.3-2

The Federal operating permit program under Subchapter V of the CAA (42 U.S.C. Sections 7661-7661f) requires certain major stationary sources of hazardous and/or criteria air pollutants to obtain a federal operating permit, commonly called a "Title V permit." Among other things, a Title V operating permit combines all federally applicable requirements for the affected major stationary source into a single operating permit that requires continuous compliance and periodic compliance certifications to be completed by a responsible official. Edwards AFB currently meets the definition of a major stationary source under the CAA and operates under a Title V operating permit.

Subsection 3.3.1.2, Pages 3.3-4 and 3.3-5

~~**Title V and Extreme Attainment Designation**~~

~~In general, owner/operators of defined industrial or commercial sources that emit criteria air pollutants in quantities greater than the thresholds reported in 40 CFR 51 more than 25 tons per year (tpy) of NOx and ROG must process a Title V permit. For example, 50 tons per year (tpy) of NOx is the threshold for facilities in serious nonattainment areas for ozone, or 25 tpy in areas in severe nonattainment. In Extreme Nonattainment Designation areas, the definition of a major source which requires Title V permitting, changes from 25 tpy to 10 tpy. This change results in more businesses having to comply with Title V permitting requirements under the stricter Extreme nonattainment designation.~~

~~Title V does not impose any new air pollution standards, require installation of any new controls on the affected facilities, or require reductions in emissions. Title V does enhance public and USEPA participation in the permitting process and requires additional record keeping and reporting by businesses, which results in significant administrative requirements.~~

Section 3.6, Cultural and Paleontological Resources

Subsection 3.6.3.1, Page 3.6-50

~~The Air Force has initiated formal consultation with the California SHPO; however, the consultation is currently ongoing.~~ Through consultation, the California SHPO has concurred on the Air Force finding of adverse effect, the eligibility determinations, and the APE. The Air Force and California SHPO are currently working to finalize a Memorandum of Agreement (MOA) for the project.

Master Response

Master Response 1: The following comments have been received, reviewed by the appropriate staff, and determined to not intrinsically require a modification to the text of the Final EIS. Also, while these specific comments are related to the project as a whole, they have been determined to not identify any specific environmental issue that requires a response, other than this general acknowledgement for purposes under CEQA and NEPA. They will be provided to the appropriate decision makers for review in consideration of the project.

1-A, 1-C, 2-A, 2-C, 3-A, 3-B, 3-C, 3-D, 4-A, 4-B, 4-C, 4-J, 6-A, 6-C, 6-I, 7-B, 8-A, 8-B, 8-D, 9-A, 9-B, 9-C, 9-D, 9-E, 9-F, 9-G, 10-A, 11-A, 11-C, 11-D, 11-E, 11-F, 11-H, 11-U, 11-Y, and 11-Z.

BREWER-ANDERSON, ANDREA B NH-03 USAF AFMC 412 CEG/CEVA

From: Lee Clauss <LClauss@sanmanuel-nsn.gov>
Sent: Sunday, July 21, 2019 10:15 PM
To: BREWER-ANDERSON, ANDREA B NH-03 USAF AFMC 412 CEG/CEVA; KNESEL, CLIFFORD A III NH-03 USAF AFMC 412 CEG/CEVA; RADEMACHER, THOMAS A NH-03 USAF AFMC 412 CEG/CEVA
Cc: Jessica Mauck
Subject: [Non-DoD Source] Edwards AFB Solar Project Draft EIS/EIR Executive Summary

Good evening, Andrea,

Thank you for disseminating the above-referenced document to the San Manuel Band of Mission Indians (SMBMI) Cultural Resources Management Department. SMBMI appreciates the opportunity to review the documentation, which was received by our Department on May 30, 2019. The opportunity to read the draft document in advance of public release is most appreciated.

After reviewing the document, our Department can state that it finds (1) no fatal flaws with the information contained in the document pertaining to the brief cultural overview of Serrano peoples; (2) that consultation efforts have been accurately described and; (3) that the mitigation measures which we have had large part in formulating have been faithfully represented in the document. The only comment to offer as content is that EAFB should triple-check the cultural resource site tallies in each report section for consistency in reporting. Furthermore, basic tables that summarize the site totals for each alternative and gen-tie—perhaps to be inserted at the close of the narrative descriptions of the same--would be quite helpful to the reader. 1-A

As to SMBMI's final positions with regard to preferred alternatives and Gen-tie options, we will hold that commentary in reserve until the final EIS/EIR is issued for comment. That said, I would encourage EAFB to provide more detail and explanation as to how your preferred alternative (Alternative A) meets all of your (as well as California's and Kern County's) goals and how, quite specifically, Alternative B does not. This is not clear or definitive in the document as currently written. 1-B

This communication concludes SMBMI's input on this project, at this time. We look forward to receiving the final EIS/EIR for review and formal comment in the near future. We also look forward to continued consultation on other, related EAFB Solar Project planning documents and your agency's partnership as we all move forward together. If you should have any questions with regard to the content of this communication, please do not hesitate to contact me at your convenience, as I will continue to be your Section 106-based Point of Contact (POC) for SMBMI with respect to this project. Should Kern County require any additional consultation pursuant to CEQA regarding this project, please inform them that their contact will continue to be SMBMI's Cultural Resources Analyst, Jessica Mauck, who can be reached at jmauck@sanmanuel-nsn.gov or at 909.864.8933. 1-C

Respectfully,

Lee

Lee Clauss
DIRECTOR, CULTURAL RESOURCES MANAGEMENT
O: (909) 864-8933 x503248
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26569 Community Center Drive Highland California 92346
SAN MANUEL
BAND OF MISSION INDIANS

Response to Comment Letter 1 – San Manuel Band of Mission Indians

1-A: Please see Master Response 1, above.

1-B: The commenter states that the Alternatives discussion in the document is not clear and they encourage the Lead Agencies to provide additional explanation about how the preferred alternative (Alternative A) met all goals and how Alternative B did not. This comment is noted for the record.

Section 4.6.1.2, *Conclusion*, of the Draft EIS/EIR provides further explanation about how the preferred alternative met the project goals, while Alternative B would not. The discussion states that Alternative B would also meet the goals identified in the Draft EIS/EIR; however, Alternative B would not achieve the same magnitude of benefit when compared to Alternative A. Furthermore, although Alternative B would achieve some of the project objectives, it would not achieve the goals of developing facilities to produce the necessary amount of clean electricity to help achieve California's renewable energy goals to the degree associated with the proposed project.

1-C: Please see Master Response 1, above.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

July 26, 2019

Ms. Andrea Brewer-Anderson
U.S. Air Force
120 North Rosamond Boulevard
Bldg. 3735, Suite A
Edwards AFB, California 93524

Subject: Draft Environmental Impact Statement/ Environmental Impact Report (DEIS/EIR), Edwards Air Force Base Solar Project, Kern County, California (EIS No. 20190124)

Dear Ms. Brewer-Anderson:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The U.S. Air Force proposes a land lease of up to 4,000 acres and subsequent development of an up to 750-megawatt solar photovoltaic renewable energy project in the northwestern corner of Edwards Air Force Base that would produce energy to be sold to the commercial energy grid. The project includes construction of a 10 to 14-mile 230 kilovolt generation tie line (gentie) from the proposed solar facility to either the Southern California Edison Windhub Substation and/or the privately owned Westwind Substation. The gentie-line would be located on private land in Kern County and subject to County jurisdiction. 2-A

According to the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR), the solar site is likely located in a 100-year floodplain. While the project includes a preliminary Flood Hazard Assessment, it defers much planning to the reports generated under mitigation measures, including a finalized Flood Hazard Assessment and consultation with the Federal Emergency Management Agency (FEMA) to generate flood maps. This information is necessary for the assessment of impacts and the selection of alternatives. EPA recommends including this information in the Final EIS/EIR so that it is available to decision-makers and the public prior to agency decision-making. We also recommend siting critical elements of the project outside the 500-year floodplain; using fencing that will allow unimpeded water flows and Desert Tortoise onto the site after construction; using treated wastewater during project construction; and ensuring minimal grading occurs for the benefit of air quality and vegetation/habitat. Our detailed comments are attached. 2-B

Effective October 22, 2018, EPA no longer includes ratings in our comment letters. Information about this change and EPA's continued roles and responsibilities in the review of federal actions can be found on our website at: https://www.epa.gov/nepa/epa-review-process-under-section-309-clean-air-act. 2-C

EPA appreciates the opportunity to review this DEIS. When the FEIS is released for public review, please send one copy to the address above (mail code: TIP-2). If you have any questions, please contact me at (415) 947-4161, or contact Karen Vitulano, the lead reviewer for this project, at 415-947-4178 or vitulano.karen@epa.gov. 2-C

Sincerely,

Connell Dunning

Connell Dunning, Acting Manager
Environmental Review Branch

Enclosures: EPA's Detailed Comments

cc: Janet Mayes, Kern County Planning Department
Ray Bransfield, U.S. Fish and Wildlife Service
Jan Zimmerman, Regional Water Quality Control Board

Floodplains

The Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) includes a preliminary Flood Hazard Assessment showing that a substantial portion of the proposed solar facility site would likely be in a 100-year flood zone (p. 3.16-13). The analysis of flow patterns from the Flood Hazard Assessment concluded that, during a 100-yr, 24-hour storm, the majority of the site would be inundated; roughly 35% would be covered in greater than 6 inches of water; and flows would be as high as 3 feet along defined channels, which are concentrated along the center portion of the site (Appendix B16, Figure 7, and DEIS/EIR p. 3.16-11).

The DEIS/EIR includes a mitigation measure requiring the developer to prepare a final Flood Hazard Assessment before project construction, to confirm with greater certainty the existing flood hazards on site (p. 3.16-18, 3.16-22). The mitigation measure states that prior to the preparation of the Final Flood Hazard Assessment and the Grading Plan, the developer would consult with the Federal Emergency Management Agency (FEMA) for flood zone mapping services of the estimated area of impact on Edwards Air Force Base that is currently unmapped (p. 3.16-32). Once flood risks are determined by FEMA, these official flood zone boundaries would be incorporated into the final version of all technical hydrology and flood-related documents prepared for the project so that appropriate design recommendations for the projects can be made. Based on specific flood zone information, construction staging areas and final project structures would be sited to avoid existing hydrologic features (including flood zones and drainages) to the "maximum extent possible" (p. 3.16-32). We assume that flood zones refer to the 100-year floodplain but it is not specified. We appreciate the commitment to avoid drainages, as we recommended in our scoping comments.

We have concerns that: (1) planning based on the 100-yr floodplain could be insufficient to protect the project under current and future precipitation patterns; (2) developing in the 100-yr floodplain could result in water quality impacts; and (3) obtaining critical hydrology information will be deferred and will not be available to decision-makers. 2-D

(1) Planning based on the 100-yr floodplain could be insufficient with new precipitation patterns

In our scoping comments, we recommended that the project proponent plan for changing precipitation patterns, including increased intensity and severity of storms now being experienced under a changing climate. While mapping the 100-year floodplain is useful, planning based on the 100-year flood zone may not be sufficient to both protect the project and avoid environmental impacts. FEMA, in its guidance document "Further Advice on Executive Order 11988 – Floodplain Management" states that "in light of increasing flood damages occurring outside of the designated 100-year floodplain, it may be appropriate to consider using a higher flood standard for proposed activities which are funded, either directly or indirectly, by the federal government". Additionally, as we noted in our scoping comments, this facility can be considered a "critical facility" under Executive Order 11988. FEMA identifies Power Generating Stations as possible critical facilities[1] and states that "according to Executive Order 11988, Floodplain Management, Federal agencies must conduct rigorous alternative site evaluations and meet higher design standards before funding, leasing, or building critical facilities in the 0.2-percent-annual-chance flood hazard area", indicating

[1] FEMA Fact Sheet "Critical Facilities and Higher Standards". Available: https://www.fema.gov/media-library-data/1436818953164-4f8f6fc191d26a924f67911c5eaa6848/FPM_1_Page_CriticalFacilities.pdf

that such facilities should be developed outside of the 500-yr floodplain or protected to the 500-year flood elevation. 2-D

(2) Developing in the 100-yr floodplain could result in water quality impacts

The DEIS/EIR states that flooding is more of an impact to the project site itself and would thus represent an inspection and maintenance issue for the project developer rather than a significant health and safety risk (p. 3.16-18). However, the document does acknowledge water quality impacts, indicating that flooding can result in erosion, loss of vegetation, and sedimentation of downstream waterbodies which "potentially affect water quality and ecology of the local area" (App. B19, p. 3). The DEIS/EIR identifies water bodies that would receive flows under extreme flooding scenarios, which are increasingly likely, including Rogers Dry Lake which has designated beneficial uses under the Lahontan Region Water Quality Control Plan (p. 3.16-15). The DEIS/EIR indicates that the primary concern with respect to flooding is the potential to inundate substations, switchyards, and/or Operation and Maintenance areas, which could have the potential to release debris and/or hazardous materials to floodwaters and eventually downstream, as well as the potential for localized high-velocity floodwaters to scour steel pile foundations. It states that the potential impact is therefore on water quality rather than public safety, and therefore it is important to ensure the final design of the project considers both the depth and velocity of floodwaters, so sensitive areas such as material storage areas are not inundated and solar panel racking systems are not compromised (p. 3.16-18). 2-E

(3) Critical hydrology information will not be available to decision-makers

The information that will be generated from the FEMA mapping and finalizing of the Flood Hazard Assessment is key to determining what size solar facility the project location can support with the maximum avoidance of drainages and flood zones incorporated. Since the two action alternatives are distinguished by size and location, this information also has bearing on the selection of alternatives. Deferring it as mitigation means the information will not be available to the decision-maker.

Recommendations: EPA has the following recommendations: 2-F

- Provide guidance on what constitutes the "maximum extent possible" standard identified for avoidance of flood zones and drainages and discuss how this standard will be applied to both the 100-year and 500-year floodplains. We recommend avoiding development in the 100-year floodplain.
- Locate all substations, switchyards, and Operation and Maintenance areas outside of the 500-year floodplain, consistent with FEMA guidance[2]. Describe in the FEIS/EIR how essential equipment would be protected from flooding to allow the critical facility to perform its primary function during and after a flood event.
- When finalizing the Flood Hazard Assessment, ensure that consideration is given to changing precipitation patterns and upsize stormwater mitigation features to capture greater flows occuring in shorter time periods. The DEIS/EIR cites to retention basin dimensions based on Kern County standards (p. 3.16-21), but these standards may not consider climatic precipitation changes. Discuss the precipitation assumptions behind the County standards in the FEIS/EIR and specify how increased precipitation patterns will be accommodated.

[2] Federal Emergency Management Agency, 1987, *Further Advice on Executive Order 11988 Floodplain Management*. Available: https://www.fema.gov/media-library/assets/documents/3430

- Include a project site map in the Final EIS/EIR that indicates the drainages that will be avoided, and the location of mitigation, such as retention basins, for development in any areas of the site that could become inundated. We recommend larger drainages be given wide buffers so the channels may adjust to the new hydraulic conditions without the need for major human-made structures.
- Consider establishing permanent sediment and channel elevation monitoring stations to assist in the adaptive management of erosion and sedimentation and include in the "Environmental and Construction Compliance Monitoring Plan/Mitigation Monitoring, Reporting, and Compliance Program" identified on p. 3.14.
- Include the updated flood hazard assessment information in the Final EIS so it is available to decision-makers to inform their decision. If the project size or footprint changes because of these studies, the preferred alternative can be updated in the Final EIS.

2-F

Fencing for Water and Desert Tortoise

The DEIS/EIR states that the proposed facilities would be designed to allow the passage of surface water through the project site at a natural flow rate (p. 3.16-23); therefore, the construction and operation of the proposed facilities would have a less-than-significant impact related to impeding or redirecting flood flows. However, the DEIS/EIR identifies proposed fencing that could impede/redirect flood flows, including chain-link fencing for site security (p. 2-28) and fencing for the solar facility boundary during initial site preparation activities (p. 2-30), but does not describe how the proposed fencing will allow for unimpeded drainage.

Current solar photovoltaic project proposals are proceeding with a new approach to allowing the federally and state-threatened Desert Tortoise back onto the site after construction, and this type of fencing could also allow for unimpeded water flows. A utility-scale PV project in Nevada under proposal will install temporary desert tortoise exclusion fencing outside of the chain link perimeter fence during construction, and the permanent perimeter fence would be installed to leave a 6 to 8-inch opening at the bottom of the fence to allow the movement of desert tortoises across and through the site when the temporary tortoise fence is removed following construction. The Gemini Solar Project DEIS, currently out for public review, has this description: "When construction is complete, the security fencing around the mowed areas would be modified allowing approximately 8 inches (20 centimeters) of space at the bottom of the fence to allow desert tortoise the opportunity to reoccupy the solar development areas."[3]

2-G

> ***Recommendation:*** EPA recommends the use of the specialized fencing, as identified above or similar design, for the benefit of Desert Tortoise as well as to allow for unimpeded drainage. If this fencing is not utilized, provide detailed information in the Final EIS/EIR regarding fence design that will not impede or redirect flood flows.

Water Use

According to the DEIS/EIR, groundwater will be wholly or partially used to supply the project's water demands. It would likely be trucked in and provided by the Mojave Public Utility District (MPUD)(p. 3.16-29), who obtains water from both the Fremont Valley groundwater basin (FVGB), which is not in an identified state of critical overdraft (p. 3.16-29), and from a connection with the Antelope Valley-East Kern Water Agency (AVEK) (p. 3.16-30) for which a Superior court ruled the groundwater basin was in

2-H

[3] Bureau of Land Management. April 2019. *Gemini Solar Project Resource Management Plan Amendment and Draft Environmental Impact Statement.* Page 2-2. Available: https://eplanning.blm.gov/epl-front-office/projects/nepa/100498/174036/211461/Gemini_508_DEIS_Volume_I_Chapters_1_to_4.pdf

a state of overdraft (p. 3.16-5). The DEIS/EIR also states that onsite groundwater could be used during the operations phase and any cone of depression that develops, likely on the order of a few feet, would be minor, highly localized and not significant to the FVGB (p. 3.16-20), while also stating that Edwards AFB would not provide water for the project (3.10-16).

The document identifies renewable energy generation as a significant and growing land use in the desert region, with tens of thousands of acres of wind and solar power plants currently operating, under construction, or planned near the proposed project (p. 2-4). A discussion of cumulative impacts to groundwater supply is not included in the NEPA discussion; the CEQA discussion states that short-term construction-related demands on groundwater would be high when considering all projects in the cumulative scenario but that it is unlikely that construction of all or many of the proposed solar projects would overlap[4], and the other solar projects could obtain their water from various sources, therefore cumulative impacts would be less than significant (p. 3.16-30). Considering the many projects, the potential for overlapping construction schedules within a 6-mile radius, and state of overdraft of the AVEK groundwater basin, the conclusion of less than significant impact should be further expounded. The DEIS/EIR states in the project description that, to the extent available, tertiary treated water for non-potable uses would be obtained from the Rosamond Community Services District (p. 194-5) but this is not mentioned further, is inconsistent within the DEIS since there are multiple statements that the developer intends to purchase water from MPUD, and is not included in the impact assessment discussions. 2-H

> ***Recommendation:*** EPA recommends obtaining and securing treated wastewater for the construction-phase of the project when the most water (estimated 200 acre-feet/yr) would be used. In the Final EIS/EIR, discuss the state of discussions with the Rosamond Community Services District and likely availability of treated wastewater for use in the construction phase of the project.
>
> Clarify the likelihood that onsite wells would be constructed and how that comports with the statement that Edwards AFB would not provide water. We concur that the project site location is not proximate to current Operable Units associated with Superfund cleanups on the Base; however, if on-site wells are constructed, the groundwater levels should be monitored to ensure that predicted groundwater cone of depression effects are as described, and do not result in changes in site conditions that could affect cleanup progress.

Grading

The DEIS/EIR states in several places that full-scale grading would not occur but that the applicant plans to implement the "mow and roll" technique of site preparation, which allows for a significant reduction in the extent of rough grading and related dust control needs. Instead of conducting vegetation clearing and mass grading across the whole site, limited grading would be conducted to establish construction staging areas; site access roads; inverter pads; utility trenches; building pads for onsite substation, switchyards and the operation and maintenance (O&M) building; and discreet areas where leveling may be needed for pile installation (p. 3.5-46). 2-I

We commend the Air Force for this practice, as it is vital to preserve existing vegetation to the maximum extent in order to (1) reduce dust, (2) minimize impacts to desert vegetation[5], and (3)

[4] The air quality chapter states that there are a number of projects within a 6-mile radius that have the potential for overlapping construction schedules (p. 3.3-50)

[5] The DEIS/EIR acknowledges that successful revegetation can be difficult to achieve (p. 3.1-33)

minimize the introduction and spread of invasive plant species[6]. However, Mitigation Measure 3.16-4a states that the grading plan will be based on the flood zone maps generated (p. 3.16-33), and Mitigation Measure 3.16-5a states that solar panel sites located within a 100-year floodplain shall be graded to direct potential flood waters (p. 3.16-34). Since the DEIS/EIR already indicates that the majority of the site is likely to be in the 100-yr floodplain, we are concerned that more grading will occur on the site than is needed to achieve the air quality, vegetation and invasive species prevention benefits identified above. We also note that the Aesthetics chapter states that "the project would remove all of the vegetation within the view" (pp. 3.1-28, 3.1-31). 2-I

> ***Recommendation:*** Ensure the minimal grading approach is retained in the final project description and enforced during the construction phase. The Final EIS/EIR should identify the amount of conventional grading that is likely to occur, so the impacts from dust, loss of vegetation, and spread of invasive species are evaluated and disclosed. As stated above, this would only occur after finalizing the Flood Hazard assessment and consulting with FEMA; therefore, we recommend not deferring these studies until after agency decisions.

Air Quality

The project is located in an area designated as nonattainment for ozone. The discussion of air basin status states that the Eastern Kern Air Pollution Control District expects the USEPA to approve their request to be reclassified as "serious" nonattainment. EPA approved the Eastern Kern reclassification request to Serious[7] (effective August 6, 2019). We appreciate the commitment for mitigation measures in the DEIS/EIR that will reduce ozone precursors, as well as the proposed dust control mitigation. The DEIS/EIR concluded that impacts from particulate matter less than 10 microns (PM_{10}) would be considered significant under the CEQA analysis. 2-J

> ***Recommendation:*** Update the air quality summary to reflect EPA's approval of the Easter Kern APCD reclassification request to "serious" nonattainment. Ensure site grading is minimized, per our other recommendations, and that air quality mitigation measures are retained in the final project description and are included in the mitigation monitoring plan.

[6] Invasive species are enhanced by blowing dust that creates habitat for the introduction of Russian thistle and other non-native species, particularly within those areas of the EUL Study Area that have burned in the past decade (p. 3.5-46)

[7] 83 FR 31334, July 5, 2018, See https://www.govinfo.gov/content/pkg/FR-2018-07-05/pdf/2018-14444.pdf#page=1

Response to Comment Letter 2-U.S. Environmental Protection Agency

2-A: Please see *Master Response 1*, above.

2-B: The comment requests that a final Flood Hazard Assessment and consultation with the Federal Emergency Management Agency (FEMA) to generate flood maps be included in the Final EIS/EIR. The comment raises the concern that the project defers planning to reports generated under mitigation measures which is necessary for assessment of impacts and selection of alternatives. Other recommendations in the comment include siting critical elements outside the 500-year floodplain, use of fencing that allows for Desert Tortoise access, use of treated wastewater for construction, and assurances of minimal grading.

These comments are addressed individually in Response to Comments 2-D, 2-E, 2-F, and 2-G, below.

2-C: Please see *Master Response 1*, above.

2-D: The comment raises concerns about planning based on 100-year floodplain data which could be insufficient to protect the project, could result in water quality impacts (see Response to Comment 2-E), and that the hydrology information of the final planning studies would be unavailable to decision-makers (see Response to Comment 2-F). As noted in the Draft EIS/EIR, and as required by Mitigation Measure MM 3.16-3a, the proposed improvements would be required to adhere to the Kern County Floodplain Management Ordinance, which requires incorporation of a 1-foot freeboard above the calculated flood depths. Maintaining this 1-foot freeboard above the calculated flood depths would use the best available science to protect against anticipated flood hazards and would be considered sufficient to protect against significant damage from flooding events. While there would be no guarantee against incurring some damage in large storm events, with adherence to the County's ordinance and any future updates and amendments that are in effect at the time of the future project's application, the potential for significant impacts would be less than significant.

The comment also suggests that the proposed facility could be considered a "critical facility" under Executive Order 11988. However, according to FEMA, a power generating facility is only considered a critical facility if it is "vital to maintaining or restoring normal services to flooded areas before, during, and after a flood." The project would be one of numerous solar facilities across Kern County that is located in a rural and sparsely populated area and by itself would not be considered vital to maintaining or restoring electricity to a flood stricken area. To avoid confusion, the Edwards AFB Solar Project will not provide power to Edwards AFB, instead the power will be supplied to the off-base power grid via connection to the Windhub and/or Westwind substations.

Furthermore, on August 15, 2017, the President issued Executive Order 13807 ("Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects") revoking Executive Order 13690, which had contained provisions on a 500-year floodplain. Per Executive Order 13807, Federal infrastructure projects are no longer required to elevate the project site to the highest elevation based-on existing flood conditions.

Therefore, the preliminary flood hazard assessment that has already been completed for the Draft EIS/EIR, has sufficiently identified the potential flood hazards present at the site. The required consultation with FEMA (Mitigation Measure MM-3.16-2a), final flood hazard assessment (Mitigation Measure MM 3.16-3a), and grading plan (Mitigation Measure MM 3.16-4a) would be required prior to commencement and would allow decision makers an

ability to review proposed plans prior to issuance of any grading permit. As a result, there would be opportunity for decision makers to review proposed plans based on site specific hydrology studies consistent with the current flood ordinance to ensure that appropriate protection against future flooding events is incorporated into the project design.

2-E: The comment recounts the analysis in the Draft EIS/EIR related to flooding and potential water quality impacts. There is no comment on the adequacy of the analysis. However, in terms of potential water quality impacts, as discussed on page 3.9-21, the project would use limited quantities of hazardous materials. Areas that do store hazardous materials would include appropriate containment measures and spill response containment measures in addition to adhering to the County flood ordinance. Also, Mitigation Measure MM 3.16-4a would require a grading plan that includes erosion and sedimentation measures to minimize runoff and the potential for adverse effects to receiving waters.

2-F: The comment states that the information generated from FEMA (Mitigation Measure MM 3.16-2a) and the final flood hazard assessment (Mitigation Measure MM 3.16-3a) would be key to determining size and location of solar facilities with maximum avoidance of drainages and flood zones incorporated and deferral to implementation of these mitigation measures would make the information unavailable to the decision maker. The comment also includes recommendations for project design including avoidance of the 100-year floodplain, location of substations/switchyard/O&M areas, drainage control features, adaptive management measures, and providing the updated flood hazard assessment to decision makers in the Final EIS/EIR. As described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, the project does not currently have a final design of solar facilities. However, as described under Response to Comment 2-D, above, implementation of these required mitigation measures would ensure that the project would be designed in accordance with regulatory requirements and with design measures that are appropriately sized and minimize potential impacts. Note that the recommendations included in this comment will be part of the record and available to decision makers for consideration in the final approval process. It should also be noted that the Draft EIS/EIR did include a 5,800-acre study area for a project that would require a lease and development of only 4,000 acres to minimize impacts to environmentally sensitive areas which would include avoidance of drainages.

2-G: The comment states that the Draft EIS/EIR does not describe how the proposed fencing will allow for unimpeded drainage and suggests that the proposed fencing be designed to allow for Desert Tortoise access and also allow for unimpeded water flows. The Air Force has proposed exclusion fencing in order to limit the possibility of take which supports project coverage by the Edwards AFB Biological Opinion. Project fencing will be designed such that it will not impede the flow of stormwater drainage from the project site.

2-H: The comment concerns water supply use and potential cumulative impacts to the groundwater basin, and makes recommendations for consideration of using treated wastewater for the construction phase of the project. The Draft EIS/EIR concluded that it would be unlikely that all of the cumulative solar projects, whose water demand is highest in the first year or two (construction), would all occur simultaneously. In addition, similar to the proposed project, a Water Supply Assessment would be required that identifies the source of water supply, availability of that water supply, and is typically followed by a will-serve letter by the water supplier who must meet water supply management requirements to protect groundwater supplies in accordance with management plans. Therefore, considering that the availability of water supply would be secured during planning stages, which are going to vary in timing for the various solar projects as well as

the source (i.e., groundwater, imported surface water, treated wastewater), the potential cumulative impact would be less than significant. Page 3.16-17 of the Draft EIS/EIR (see also Page 3.16-17 of this Final EIS/EIR) does state that tertiary treated water may be used on the project site for non-potable uses to the extent available. Finally, the Edwards AFB would not provide water for the project, meaning that existing AFB facilities or wells would not be used but the project developer may choose to install a well onsite for operational water supply needs which are primarily used for periodic panel washing.

2-I: The comment raises concern over the amount of grading that would be required to accommodate the requirements of Mitigation Measure MM 3.16-4a to direct flood waters. As noted in the Draft EIS/EIR on page 2-28, localized grading would be required as needed for areas that require compacted soils such as the substation pad site, inverter shelters and roads. Substantive earthwork, however, is not anticipated within the solar array areas. The project would not involve any large-scale changes in topography (page 3.16-17 of this Final EIS/EIR) primarily to preserve existing drainage patterns. However, some areas may require minimal grading adjacent to existing and proposed right of ways. Mitigation Measure MM 3.16-3a will be revised as follows for clarification:

"Where deemed necessary, solar panel sites shall be minimally graded to direct potential flood waters into channels adjacent to the existing and proposed right of ways without increasing the water surface elevations more than 1 foot or as otherwise required by Kern County's Floodplain Management Ordinance and in accordance with the final Grading Plan as approved by Kern County Public Works - Engineering."

2-J: The Final EIS/EIR will be updated as follows to reflect the USEPA's approval of the redesignation of the air basin to "serious" nonattainment.[1]

Page 3.3-2 of this Final EIS/EIR has been changed as follows:

"December 31, 2020 (EKAPCD, 2017). The ~~EKAPCD expects the~~ USEPA ~~to~~ approved their request to ~~be reclassified~~ reclassify the basin as "serious" nonattainment effective August 6, 2019 (~~EKAPCD, 2017~~83 FR 31334, July 5, 2018). The USEPA has designated East…"

Page 3.3-15, Table 3.3-1 will be changed as follows:

TABLE 3.3-1
NATIONAL AND STATE CRITERIA POLLUTANT STANDARDS AND EKAPCD ATTAINMENT STATUS[1]

Pollutant	Averaging Time	National Standard	State Standard	EKAPCD Attainment Status	
				National	State
Ozone	1 Hour	–	0.09 parts per million (ppm)	Attainment**	**Nonattainment**
	8 Hours	0.070 ppm	0.070 ppm	**~~Serious~~ ~~Moderate~~ Nonattainment***	**Nonattainment**
Carbon Monoxide (CO)	1 Hour	35 ppm	20 ppm	Unclassifiable/ Attainment	Unclassified
	8 Hours	9 ppm	9.0 ppm		

[1] 83 FR 31334, July 5, 2018, Available online: https://www.federalregister.gov/documents/2018/07/05/2018-14444/air-plan-approval-california-eastern-kern-air-pollution-control-district-reclassification

Pollutant	Averaging Time	National Standard	State Standard	EKAPCD Attainment Status	
				National	State
Nitrogen Dioxide (NO_2)	1 Hour	0.100 ppm	0.18 ppm	Unclassified	Attainment
	Annual	0.053 ppm	0.030 ppm		
Sulfur Dioxide (SO_2)	1 Hour	0.075 ppm	0.25 ppm	Unclassified	Attainment
	3 Hours	0.5 ppm	–		
	24 Hours	0.14 ppm	0.04 ppm		
	Annual	0.030 ppm	–		
Respirable Particulate Matter (PM_{10})	24 Hours	150 µg/m^3	50 µg/m^3	**Serious Nonattainment**	**Nonattainment**
	Annual	–	20 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	35 µg/m^3	–	Unclassifiable/ Attainment	Unclassified
	Annual	12.0 µg/m^3	12 µg/m^3		
Lead	Monthly	–	1.5 µg/m^3	Unclassifiable/ Attainment	Attainment
	Quarterly	1.5 µg/m^3	–		
	Rolling 3-Month Average	0.15 µg/m^3	–		

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter.

1 There was no data available for Sulfur Dioxide (SO_2) at any of the monitoring stations.

* The attainment status for the National 8-hour ozone standard reflects the 2008 standard (0.075 ppm); formal designations for the 2015 standard (0.070 ppm) have not yet been finalized.

** 1-hour ozone NAAQS was revoked effective June 15, 2004. EKAPCD was in attainment for 1-hour ozone NAAQS at time of revocation; the proposed Attainment Maintenance designation's effective date. was June 21, 2004, therefore it did not become effective.

SOURCE: CARB, 2016a; USEPA, 2018; EKAPCD, 2014

Site grading shall be minimized per the "mow and roll" technique as discussed in the Draft EIS/EIR (page 3.5-6) and the EPA's suggestions in Response to Comment 2-I to ensure that this minimal grading approach is retained will be adhered to. Additionally, all the air quality mitigation measures presented in the Draft EIS/EIR will be retained in the Final EIS/EIR and will be included in the mitigation monitoring plan.

California
Department of Conservation
Division of Oil, Gas, and Geothermal Resources

Gavin Newsom, Governor
David Bunn, Director
801 K Street, MS 18-05
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T: (916) 445-9686

06/19/2019

County: Kern - Kern County Planning and Natural Resources Department
Victor Medrano
4800 Stockdale Highway, Bakersfield, CA 93309, USA
victor.medrano@conservation.ca.gov

Construction Site Well Review (CSWR) ID: 1011618

Assessor Parcel Number(s): 24424001, 24425001, 24425002, 24425003, 24425004, 24425006, 24425007, 24425008, 43001101, 43001102, 43001103, 43001104, 43001105, 43001106, 43101003

Property Owner(s): Edwards AFB Solar LLC

Project Location Address: Intersection of Lone Butte Rd and E. Trotter Ave, Mojave, California, 93501

Project Title: Edwards AFB Solar Project by Edwards AFB Solar, LLC

Public Resources Code (PRC) § 3208.1 establishes well reabandonment responsibility when a previously plugged and abandoned well will be impacted by planned property development or construction activities. Local permitting agencies, property owners, and/or developers should be aware of, and fully understand, that significant and potentially dangerous issues may be associated with development near oil, gas, and geothermal wells.

The Division of Oil, Gas, and Geothermal Resources (Division) has received and reviewed the above referenced project dated 6/10/2019. To assist local permitting agencies, property owners, and developers in making wise land use decisions regarding potential development near oil, gas, or geothermal wells, the Division provides the following well evaluation. 3-A

The project is located in Kern County, within the boundaries of the following fields:

Our records indicate there are 0 known oil or gas wells located within the project boundary as identified in the application.

- Number of wells Not Abandoned to Current Division Requirements as Prescribed by Law and Projected to Be Built Over or Have Future Access Impeded by this project: 0
- Number of wells Not Abandoned to Current Division Requirements as Prescribed by Law and Not Projected to Be Built Over or Have Future Access Impeded by this project: 0
- Number of wells Abandoned to Current Division Requirements as Prescribed by Law and Projected to Be Built Over or Have Future Access Impeded by this project: 0
- Number of wells Abandoned to Current Division Requirements as Prescribed by Law and Not Projected to Be Built Over or Have Future Access Impeded by this project: 0

3-B

As indicated in PRC § 3106, the Division has statutory authority over the drilling, operation, 3-C

California
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Division of Oil, Gas, and Geothermal Resources

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maintenance, and abandonment of oil, gas, and geothermal wells, and attendant facilities, to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil, gas, and geothermal deposits; and damage to underground and surface waters suitable for irrigation or domestic purposes. In addition to the Division's authority to order work on wells pursuant to PRC §§ 3208.1 and 3224, it has authority to issue civil and criminal penalties under PRC §§ 3236, 3236.5, and 3359 for violations within the Division's jurisdictional authority. The Division does not regulate grading, excavations, or other land use issues. 3-C

If during development activities, any wells are encountered that were not part of this review, the property owner is expected to immediately notify the Division's construction site well review engineer in the Inland district office, and file for Division review an amended site plan with well casing diagrams. The District office will send a follow-up well evaluation letter to the property owner and local permitting agency. 3-D

Should you have any questions, please contact me at (661) 334-3650 or via email at Emily.Loera@conservation.ca.gov

Sincerely,

For C. Campbell

Cameron Campbell
District Deputy

Response to Comment Letter 3 – California Department of Conservation Division of Oil, Gas, and Geothermal Resources

3-A Please see Master Response 1, above.

3-B Please see Master Response 1, above.

3-C Please see Master Response 1, above.

3-D: Please see Master Response 1, above.

CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Lahontan Regional Water Quality Control Board

July 26, 2019

File: Environmental Doc Review
Kern County

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Comments on the Draft Environmental Impact Statement/ Environmental Impact Report for the Edwards AFB Solar Project, Kern County

The Lahontan Regional Water Quality Control Board (Water Board) staff received a Draft Environmental Impact Statement/Environmental Impact Report (Report) for the above-referenced Project (Project) on June 7, 2019. The Report is a joint report prepared by the Kern County Planning and Natural Resources Department (County) and the Department of the Air Force 412th Test Wing, Edwards Air Force base submitted in compliance with provisions of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). 4-A

Water Board staff, acting as a responsible agency, is providing these comments to specify the scope and content of the environmental information germane to our statutory responsibilities pursuant to CEQA Guidelines, California Code of Regulations (CCR), title 14, section 15096. We thank the County for providing Water Board staff the opportunity to review and comment on the Report. Based on our review, we recommend the following: (1) natural drainage channels and flow paths should be maintained through the Project site to ensure no net loss of function and value of waters of the state; and (2) a site-specific Storm Water Pollution Prevention Plan (SWPPP) be prepared that identifies a combination of sediment and erosion control best management practices (BMPs) to effectively treat storm water runoff during the life of the Project. Our comments are outlined below. 4-B

WATER BOARD'S AUTHORITY

All groundwater and surface waters are considered waters of the State. All waters of the State are protected under California law. State law assigns responsibility for protection of water quality in the Lahontan Region to the Lahontan Regional Water Quality Control Board. Some waters of the State are also waters of the United States. The Federal Clean Water Act (CWA) provides additional protection for those waters of the State that are also waters of the United States.

The *Water Quality Control Plan for the Lahontan Region* (Basin Plan) contains policies that the Water Board uses with other laws and regulations to protect the quality of waters of the State within the Lahontan Region. The Basin Plan sets forth water quality standards for surface water and groundwater of the Region, which include designated beneficial uses as well as narrative and numerical objectives which must be maintained or attained to protect those uses. The Basin Plan can be accessed via the Water Board's web site at http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.shtml. 4-C

SPECIFIC COMMENTS

We recommend the following be considered in the environmental review.

1. In general, the installation of Photovoltaic (PV) grid systems for these types of projects has the potential to hydrologically modify natural drainage systems. Of particular concern is the collection of onsite storm water runoff and the concentrated discharge of that storm water to natural drainage channels. Design alternatives that are compatible with low impact development (LID) should be considered. LID components include: maintaining natural drainage paths and landscape features to slow and filter runoff and maximize groundwater recharge; managing runoff as close to the source as possible; and maintaining vegetated areas for storm water management and onsite infiltration. We recommend natural drainage channels and flow paths be maintained through the Project site to avoid no net loss of function and value of waters of the State as a result of Project implementation. 4-D

2. A Project-specific SWPPP and implementation of site-specific erosion and sediment control BMPs is an effective way to reduce potentially significant water quality impacts to a less than significant level. To that end, we recommend the development and implementation of a Project-specific SWPPP during both the construction and post-construction phases of the Project. The SWPPP should be applicable to all areas of the Project site, including the solar fields, access roads to and through the site, and the gen-tie line. Please note that temporary BMPs need to be implemented for the Project until such time that vegetation has been 4-E

restored to pre-Project conditions or permanent BMPs are in place and functioning. 4-E

3. The Report should identify post-construction storm water management as a significant Project component, and a variety of BMPs that effectively treat post-construction storm water runoff, particularly maintaining native vegetation, should be evaluated as part of the Project. Based on our experience with other solar developments in the Mojave Desert, native vegetation is the most efficient and cost-effective post-construction BMP to treat storm water runoff. Because revegetating disturbed soils in the desert is particularly challenging due to low rainfall, extreme climatic conditions, and relatively slow growth rates, we strongly encourage Project proponents to maintain and mow existing vegetation rather than clear and grub the entire site during construction. For those projects where native vegetation is maintained, we have observed that the need to implement temporary BMPs is greatly minimized and the costs associated with implementation and maintenance of post-construction BMPs is significantly reduced. 4-F

4. The Project is located within the Antelope Hydrologic Unit (Hydrologic Unit No. 626.00) and overlies the Freemont Valley groundwater basin (Basin No. 6-46). The beneficial uses of these waters are listed either by watershed (for surface waters) and by groundwater basin (for groundwater) in Chapter 2 of the Basin Plan. The proposed Project should identify and list the beneficial uses of all water resources within the Project area. 4-G

PERMITTING REQUIREMENTS FOR INDIVIDUAL PROJECTS

A number of activities associated with the proposed Project may have the potential to impact waters of the State and, therefore, may require permits issued by either the State Water Resources Control Board (State Water Board) or Lahontan Water Board. The required permits may include the following. 4-H

1. Land disturbance of more than 1 acre may require a CWA, section 402(p) storm water permit, including a *National Pollutant Discharge Elimination System (NPDES) General Construction Storm Water Permit*, Water Quality Order (WQO) 2009-0009-DWQ, obtained from the State Water Board, or individual storm water permit obtained from the Lahontan Water Board.

2. Streambed alteration and/or discharge of fill material to a surface water may require a CWA, section 401 water quality certification for impacts to federal waters (waters of the U.S.), or dredge and fill waste discharge requirements for impacts to non-federal waters, both issued by the Lahontan Water Board. 4-I

Thank you for the opportunity to comment on the Report. If you have any questions regarding this letter, please contact me at (760) 241-7365 or via email at alonzo.poach@waterboards.ca.gov or William Muir, Senior Engineering Geologist, at (760) 241-3523 (william.muir@waterboards.ca.gov.) Please send all future correspondence regarding this Project to the Water Board's email address at Lahontan@waterboards.ca.gov and be sure to include the State Clearinghouse No. and Project name in the subject line. 4-J

Alonzo Poach
Engineering Geologist

cc: California Department of Fish and Wildlife (AskR5@wildlife.ca.gov)
State Clearinghouse (SCH 2017111079) (state.clearinghouse@opr.ca.gov)

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Response to Comment Letter 4 – California Water Boards, Lahontan Regional Water Quality Control Board

4-A: Please see Master Response 1, above.

4-B: Please see Master Response 1, above.

4-C: Please see Master Response 1, above.

4-D: The comment describes concerns regarding the collection of onsite stormwater runoff and the potential for concentrated discharge to natural drainage channels. The project would maintain historical drainage patterns to the maximum extent feasible. The majority of the proposed improvements consist of solar arrays that are mounted on piers and do not concentrate runoff flows. Runoff at the site would largely continue as overland flow under existing conditions. However, Mitigation Measure MM 3.16-5a would require that a final hydrologic study and drainage plan be prepared and implemented in accordance with Kern County Development Standards, which include measures to offset increases in runoff and implement design measures to minimize flow concentrations, erosion, and sedimentation. The recommendations are noted, and will be considered by the decision makers.

4-E: The comment recommends that a SWPPP be developed and implemented during construction and post-construction phases. As noted in Response to Comment 4-B, Mitigation Measure MM 3.16-1a requires a SWPPP for construction activities. In addition, Mitigation Measure MM 3.16-5a requires preparation and implementation of a final hydrologic study and drainage plan that would cover the post-construction phase of the project. Please see pages 3.16-2 through 3.16-10 for further discussion regarding water permitting requirements applicable to the proposed project.

4-F: The comment suggests that the Draft EIS/EIR identify post-construction stormwater management as a significant component and BMPs that treat post-construction water such as maintaining native vegetation. Post-construction is analyzed as a significant component of the project on page 3.16-19 and 3.16-21. As discussed in the Draft EIS/EIR, only limited grading would be conducted and thus native vegetation would remain to the extent possible. Adherence to Mitigation Measures MM 3.16-4a (Grading Plan) and MM 3.16-5a (Hydrologic Analysis and Drainage Plan) would ensure that grading is minimized consistent with Kern County Grading Guidelines and the post-construction stormwater control features are included in the project design consistent with Kern County Development Standards and approved by the Kern County Public Works Department. Therefore, post-construction BMPs would be identified and implemented at the site in accordance with Kern County requirements and would maintain native vegetation to the extent feasible. Please see pages 3.16-2 through 3.16-10 for further discussion regarding water permitting requirements applicable to the proposed project.

4-G: The comment suggests that beneficial uses of the Antelope Hydrologic Unit and Fremont Valley groundwater basin be identified in the Draft EIS/EIR. The beneficial uses of Antelope Valley Hydrologic Unit are provided on page 3.16-9. The beneficial uses of Fremont Valley groundwater basin are municipal water supply, agricultural water supply, industrial water supply, and freshwater. Please see pages 3.16-2 through 3.16-10 for further discussion regarding water permitting requirements applicable to the proposed project.

4-H: The comment states that the NPDES General Construction Storm Water Permit may be required for the project. Page 3.16-21 of the Draft EIS/EIR provides discussion of the Storm Water Pollution Prevention Program and best management practices required by the Kern County Engineering, Surveying, and Permit Services Department. Please see pages

3.16-2 through 3.16-10 for further discussion regarding water permitting requirements applicable to the proposed project.

4-I: The comment states that a streambed alteration CWA Section 401 permit may be required. The applicability of a Section 401 permit is addressed on page 3.5-7 of the Draft EIS/EIR. Please see pages 3.16-2 through 3.16-10 for further discussion regarding water permitting requirements applicable to the proposed project.

4-J: Please see Master Response 1, above.

COUNTY OF KERN
PUBLIC WORKS DEPARTMENT
Office Memorandum

To: Lorelei Oviatt, Director
Planning and Natural Resources Department
Attn: Janice Mayes, Planner III

July 17, 2019

From: Warren D. Maxwell, Development Review Engineer
Administration and Engineering Division

Subject: 7-5.3 Draft Environmental Impact Report for the Edwards AFB Solar Project by Edwards AFB Solar, LLC (PP18136).

This Department has reviewed the Draft Environmental Impact Report for the subject project and concurs with Mitigation Measure MM 3.15-1a and recommends the following;

1. Please have the applicant submit 2 (two) signed and stamped Traffic Impact Analysis reports. One for our records and one for the Planning and Natural Resources Department. 5-A

Thank you for the opportunity to comment on this project, if you have any questions or comments please contact Paul Candelaria of this department.

Response to Comment Letter 5 – Kern County Public Works Department, Administration and Engineering Division

5-A: Thank you for your comment. Both agencies have directed the applicant to proceed as requested.

MOJAVE
AIR & SPACE PORT

July 24, 2019

Ms. Andrea Brewer-Anderson
412 CEG/CEVA
120 North Rosamond Boulevard
Building 3735, Suite A
Edwards AFB, California, 93524
Sent via email: andrea.brewer-anderson@us.af.mil

Re: Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Edwards Air Force Base (AFB) Solar Project – SCH No. 2017111079

Ms. Brewer-Anderson:

The Mojave Air & Space Port (MHV) staff have reviewed the Draft Supplemental Environmental Impact Report/Environmental Impact Statement (EIR/EIS) to support the construction of a utility-scale solar facility on Edwards Air Force Base (AFB) and the construction of a 10- to 14-mile generation tie-line (gen-tie line) outside of Edwards AFB. The proposed solar facility would be located approximately 6 miles south of Mojave in southeastern Kern County, California. The exact gen-tie route options have not been determined, but the potential routes could result in the construction of gen-tie poles with heights of 180 feet or more within 1.5 miles of MHV. 6-A

MHV offers the following comments pertaining to the EIS/EIR analysis and potential of the proposed project to affect aircraft operations on and near MHV.

ALUCP POLICY INTERPRETATION

EIS/EIR Section 2.6.1.2, Gen-Tie and Telecommunication Lines, states that power would be carried from the solar facilities at Edward AFB using a 230-kV gen-tie line, which would be constructed on a set of steel monopoles for the majority of the route with some H-frame structures. The EIS/EIR states that "Pole height would likely range between 100 and 180 feet and would not to [sic] exceed 200 feet" (page 2-28) and "It is estimated that implementation of the Proposed Action would require the installation of approximately 11 poles per mile for the off-base portion of the gen-tie lines" (page 2-29).

Portions of both gen-tie route options (EIS/EIR Figures 2-3 and 2-4) occur within the Airport Influence Area for MHV as defined in the adopted 2006 ALUCP, as amended. As such, the proposed project must be consistent with applicable ALUCP policies. However, the analysis provided throughout the EIR/EIS provides an incorrect interpretation of those policies by stating that the proposed construction of the gen-tie lines in ALUCP Zone E1 is exempt from the ALUCP policies associated with pole height. This misinterpretation has the potential to result in undisclosed airspace hazards to aircraft operating on and near MHV. 6-B

The ALUCP establishes procedures by which the County and affected incorporated cities can address compatibility issues when making decisions regarding their airports and the land uses surrounding them. Pursuant to California Public Utilities Code Section 21676, proposals for major public or private land use development that have the potential to substantially affect nearby airport activities shall be subject to compatibility review. Section 3 of the

ALUCP includes supporting compatibility criteria that apply to all airports addressed by the ALUCP. Section 4 of the ALUCP provides airport-specific policies that are applied in addition to the supporting compatibility criteria. Specific policies are provided for MHV in Section 4.9.

Section 3.4 of the EIS/EIR presents an analysis of environmental effects with regard to airspace management and use. Section 3.4.3.1, states the following with regard to airspace penetration:

> The tallest structures proposed for the project are the gen-tie line poles, which may be up to 200 feet in height. The FAA regulates structures taller than 200 feet according to FAA regulations 14 CFR Part 77.13. The gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. When compared to Zones D and E2, Zone E1 has the lowest height limit, which is 100 feet as identified in Section 4.9.5 of the ALUCP. The proposed gen-tie poles would exceed the 100-foot height limit for structures in Zone E1. However, as previously discussed, the ALUCP provides an exemption to these height requirements for gen-tie lines. Therefore, construction and operation of the Proposed Action would not result in adverse effects related to any physical airspace penetration (EIS/EIR page 3.4-15, lines 21 to 29).

An examination of the ALUCP policy does not indicate that the gen-tie lines are exempt from ALUCP policies nor does it indicate the that the construction of gen-tie lines within Zone E1 would not create adverse effects related to any physical airspace penetration or safety hazards. Rather, the policy indicates that gen-tie lines that exceed 100 feet in height may be consistent with the ALUCP following review on a case-by case basis and the outcome of that case-specific analysis. 6-B

Specific ALUCP policy language associated with MHV Policy 4.9.5 is excerpted from the 2012 ALUCP as follows:

> **4.9.5 Mojave Airport – Influence Zone E**
>
> (1) Influence Zone E1 indicates areas where development may have a significant impact on airport operations and flight safety, and as such shall have the following applied to all projects within it:
>
> (a) Development that could potentially attract large flocks of birds should implement best management practices to abate bird attraction to the development.
>
> (b) No structure or earthen formation shall exceed 100 feet in height above ground level. Private and public generator tie-in lines, collector lines and transmission lines are exempt from this requirement and *subject to review on a case by case basis* [*emphasis added*].
>
> (2) Influence Zone E2 indicates areas where development may have a lesser impact on airport operations and flight safety, yet still represent an area of concern for the Mojave Air and Space Port. As such development shall have the following applied to all projects within it:
>
> (a) No structure or earthen formation shall exceed 415 feet in height above ground level unless the East Kern Airport District provides evidence that the location of the specific structure(s) that exceeds said height is compatible with Mojave Air and Space Port flight operations.

Based on a closer review of the ALUCP, the following ALUCP policies also apply to the gen-tie lines and all other project components with regard to potential airspace conflicts:

3.3.1 Height Limits

The criteria for limiting the height of structures, trees, and other objects in the vicinity of an airport shall be set in accordance with Part 77, Subpart C of the Federal Aviation Regulations and with the United States Standard for Terminal Instrument Procedures (TERPS). Airspace plans for each airport which depict the critical airspace protection are provided in Chapter 4.

3.3.4 FAA Notification

Proponents of a project which may exceed a Part 77 surface must notify the Federal Aviation Administration as required by FAR Part 77, Subpart B, and by the California State Public Utilities Code Sections 21658 and 21659. (Notification to the Federal Aviation Administration under FAR Part 77, Subpart B, is required even for certain proposed construction that does not exceed the height limits allowed by Subpart C of the regulations. Refer to Appendix A for the specific Federal Aviation Administration notification requirements.)

a. Local jurisdictions shall inform project proponents of the requirements for notification to the Federal Aviation Administration.

b. The requirement for notification to the Federal Aviation Administration shall not necessarily trigger an airport compatibility review of an individual project by the local agency (county or city) if the project is otherwise in conformance with the compatibility criteria established herein.

c. Any project submitted for airport land use compatibility review for reason of height-limit issues shall include a copy of FAR Part 77 notification to the Federal Aviation Administration.

3.3.6 Special Land Use Development

a. The Compatibility Criteria for Zone E will accommodate a project that has the potential to create one or more flight hazards.

b. The airport operator will be consulted to consider and comment on issues affecting the airport, including height limitations, lighting, dust, and bird hazards and recommend development conditions to ensure that the airport is not affected.

c. The Zone E will be created only within the boundaries of Zone C.

The application of these policies must be considered appropriately throughout the EIS/EIR and especially in Sections 3.4, Airspace Management and Use, and Section 3.11, Land Use.

6-B

AIRSPACE MANAGEMENT AND USE

In EIR/EIS Section 3.4, Airspace Management and Use, MHV staff require clarification with specific issues regarding potential glare, airspace effects associated with gen-tie construction, and cumulative effects.

6-C

Airspace Penetration. As previously stated, the analysis of airspace penetration in Section 3.4.3 is based on an incorrect interpretation of ALUCP policies and their application to an evaluation of proposed airspace penetration associated with gen-tie construction near MHV. The discussion and analysis of airspace penetration for each alternative must be revised to correctly reflect ALUC policies and potential gen-tie conflicts. The gen-tie routes, poles, and associated construction activities must be evaluated in accordance with 14 CFR part 77 to determine whether an airspace conflict or safety hazard would occur. In the event of a conflict, the FAA may require specific remedies to enable construction, such as the use of obstruction marking and/or lights, etc. A mitigation measure should be provided to indicate that such remedies or mitigation measures would be incorporated based on the results of the FAA Aeronautical Study (Form 7460 submission and airspace analysis).

Mitigation Measure 3.4-1b. Federal Aviation Administration Notification. Mitigation Measure 3.4-1b addresses the construction of gen-tie lines and states that the developer shall submit Form 7460-1 in accordance with CFR Regulation 77.17 for the gen-tie towers. Paragraph 2 of the mitigation measure states that the developer shall provide documentation to the Kern County Planning and Natural Resources Department demonstrating that the Federal Aviation Administration has issued a Determination of No Hazard to Air Navigation for the gen-tie towers to demonstrate that no significant military mission impacts would occur. Paragraph 3 states that the developer shall also provide documentation "demonstrating that a copy of the approved form(s) has been provided to the operators of Mojave Air and Space Port" (page 3.4-23, lines 19 to 21). 6-D

The mitigation appears to address an airspace analysis that would be performed prior to construction to ensure that no airspace effects would occur to aircraft operations at Edwards AFB. The mitigation measures do not indicate that similar analyses would be conducted to identify potential effects to aircraft operations at MHV.

Section 2.5 of the EIS/EIR states that the final routing of the gen-tie line would depend on the availability of a developer to secure access easements from public and private entities. However, MHV staff requests that the developer engage with MHV staff and undertake a 7460 analysis of the proposed gen-tie routes and pole locations to identify potential airspace conflicts prior to route selection. Based on the results, the developer should work with MHV to modify the route and pole locations to avoid and minimize potential airspace. Waiting until the right-of-way has been acquired and grading or building permits are being sought reduces the flexibility necessary to avoid or minimize potential conflicts. The third item in Mitigation Measure 3.4-1b should be modified as follows.

> 3. The developer shall also provide documentation to the Kern County planning and Natural Resources Department demonstrating that <u>project components would create no significant impact to aircraft operations at MHV.</u>

LAND USE ANALYSIS

EIS/EIR Section 3.11, Land Use, evaluates the proposed project's consistency with applicable land use plans, including the ALUCP. As stated in EIR/EIS Section 3.11.2.2, a significant adverse effect on land use would occur if the project would "Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project... adopted for the purpose of avoiding or mitigating an environmental effect" (page 3.11-23, lines 19-22). 6-E

EIR Section 3.11.3.1, Analysis of Environmental Effects, states that FAA Title 14 Part 77 establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (3.8 miles) of an airport runway (page 3.11.24, lines 7-9). The paragraph states that "the gen-tie

line would likely range between 100 and 180 feet and would not to [sic] exceed 200 feet." This discussion is incomplete, as 14 CFR Part 77.17 also identifies a future object as an obstruction to air navigation if it is:

- A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.
- A height within an en route obstacle clearance area, including turn and termination areas, of a Federal Airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.
- The surface of a takeoff and landing area of an airport or any imaginary surface established under §77.19, 77.21, or 77.23. However, no part of the takeoff or landing area itself will be considered an obstruction.

Based on the location of a proposed gen-tie line, an obstruction could occur for objects less than 200 feet. For example, a proposed pole that is located within 10,000 feet of MHV could, depending upon the ground elevation at that location relative to the runway elevation, pierce the horizontal surface, which is defined as the area 150 feet above the runway surface. An appropriate airspace analysis must be performed to identify whether any of the potential gen-tie routes would penetrate a navigable surface to affect air navigation at MHV. 6-E

Section 3.11.3, Analysis of Environmental Effects, states that "Depending on the final route, the gen-tie line may be constructed within Zones D, E1, and E2 of the Mojave Air and Space Port... However, as previously discussed, the ALUCP provides an exemption to these height requirements for gen-tie lines. Therefore, the gen-tie line would comply with the ALUCP" (page 3.11-26, lines 2-7). As previously discussed, the project is not exempt from ALUCP policies and the discussion associated with each project alternative must be revised. 6-F

Table 3.11-3 summarizes a consistency analysis with the Kern County General Plan and other planning documents. The Discussion of General Plan Chapter 2, Circulation Element, states that the proposed project is consistent with Goal 1 of the General Plan's Circulation Element because it would comply with ALUCP policies related to public airports and military bases (page 3.11-40). Consistency with Policy 2 of the Circulation element is identified for the same reason (p. 3.11-40). The conclusion associated with Goal 1 and Policy 2 cannot be substantiated at this time based on the absence of an airspace analysis for MHV and the previously discussed misinterpretation of ALUCP policies. 6-G

CEQA Impact 3,11-1 concludes that the proposed project would have a less-than-significant impact because it would not conflict with FAA regulations or applicable plans. Until an airspace analysis is conducted, this conclusion cannot be substantiated.

CUMULATIVE IMPACTS

The MHV Staff appreciates the cumulative effects analysis provided in the EIS/EIR. Numerous wind turbines and solar facilities are present in the MHV vicinity, and staff have reviewed environmental documents associated with two other facilities recently. 6-H

- **Eland 1 Solar Project.** Although located 15 miles northwest of MHV, the Supplemental EIR for the project indicates that transmission lines will occur within the airport influence area for MHV.

- **Sanborn Solar Project.** The proposed project is directly south of the community of Mojave, and project components will be located within the airport influence area. The southern site of the Sanborn project is directly north of Edwards AFB and may warrant inclusion in the EIS/EIR impacts analysis. 6-H

SUMMARY

MHV staff are concerned that the EIS/EIR for the proposed project does not accurately consider the potential airspace impacts associated with the location of the proposed gen-tie lines or their potential effect on aircraft operations at MHV. In addition, staff are concerned that the misinterpretation of ALUCP policies has led to an inadequate analysis of those impacts. Based upon the numerous utility projects underway in the MHV vicinity, the importance of this airspace analysis must not be underestimated. MHV is located in an area that includes rapidly rising terrain, wind turbines, and other solar facilities that already affect aircraft operations.

Section ES.4 of the EIS/EIR identifies the CEQA project objectives, which include supporting the economic development of Kern County, Los Angeles County, and the State of California. Like Edwards AFB, the Mojave Air and Space Port supports many industries and end users who significantly contribute to the prosperity of Kern County and the state as a whole. Working together, we further economic prosperity in our region and promote the development of sustainable energy sources while remaining protective of the navigable airspace and ongoing operations associated with both facilities. 6-I

The staff at Mojave Air and Space Port is happy to discuss its comments with you. If you have any questions regarding our comments and concerns, please call us at 661-824-2433.

Sincerely,

Karina Drees
CEO and General Manager
Mojave Air and Space Port

cc: Lorelei H. Oviatt, Director, Kern County Department of Planning and Natural Resources
Janice Mayes, Planner 3, Kern County Department of Planning and Natural Resources:

Response to Comment Letter 6 – Mojave Air & Space Port

6-A: Please see Master Response 1, above.

6-B: The comment raises the concern that the Draft EIS/EIR is incorrect in stating that the proposed gen-tie line poles would be exempt from the Airport Land Use Compatibility Plan (ALUCP) policies and could result in undisclosed airspace hazards to aircraft operating on and near the Mojave Air and Space Port (MHV). The comment is noted and page 3.4-15 of this Final EIS/EIR has been revised as follows to clarify project consistency with the ALUCP policies:

"The tallest structures proposed for this project are the gen-tie line poles, which may be up to ~~200~~ 215 feet in height. The FAA regulates structures taller than 200 feet according to FAA Regulations 14 CFR Part 77.13. The gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. ~~When compared to Zones D and E2, Zone E1 has the lowest height limit, which is 100 feet as identified in Section 4.9.5 of the ALUCP~~. The proposed gen-tie poles would exceed the 100-foot height limit for structures in Zone E1. ~~However, as previously discussed, the ALUCP provides an exemption to these height requirements for gen-tie lines. Therefore, construction and operation of the Proposed Action would not result in adverse effects related to any physical airspace penetration.~~ The ALUCP policy indicates that gen-tie lines that exceed 100 feet in height may be consistent with the ALUCP following review on a case-by-case basis. Though adverse effects are not anticipated to occur, coordination of proposed gen-tie pole heights and notification as required by implementation of Mitigation Measure MM 3.4-1b would ensure adverse effects would not occur.

Page 3.4-17 has been revised as follows:

"However, as previously discussed, ~~the~~ ALUCP policy can provide~~s~~ an exemption to these height requirements for gen-tie lines. Therefore, with implementation of Mitigation Measure MM 3.4-1b, the gen-tie line would not be inconsistent with the ALUCP and is not expected to result in a safety hazard."

Page 3.4-19 has been revised as follows:

"However, as previously discussed, ~~the~~ ALUCP policy can provide~~s~~ an exemption to these height requirements for gen-tie lines. Therefore, with implementation of Mitigation Measure MM 3.4-1b, the gen-tie line would not be inconsistent with the ALUCP and is not expected to result in a safety hazard."

Page 3.11-26 has been revised as follows:

"Depending on the final route, the gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. As described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, poles associated with the gen-tie line may be up to ~~100-180~~ 215 feet tall, which would exceed the 100-foot height limit for structures in Zone E-1. However, as previously discussed, the ALUCP can provide~~s~~ an exemption to these height requirements for gen-tie lines after review which would be required as part of the FAA notification requirements of Code of Federal Regulation 77.17. Therefore, the gen-tie line would comply with the ALUCP."

6-C: Please see Master Response 1, above. Further discussion regarding impacts due to glare resulting from project implementation is provided on pages 3.4-15 through 3.4-18 of the Draft EIS/EIR.

6-D: The comment suggests that Mitigation Measure MM 3.4-1b be modified to include coordination with MHV. The mitigation measure has been revised as follows:

"MM 3.4-1b: Federal Aviation Administration Notification. Prior to issuance of grading or building permits for generation tie-line installation:

1. The developer shall submit Form 7460-1 (Notification of Proposed Construction or Alteration) to the Federal Aviation Administration, in the form and manner prescribed in Code of Federal Regulation 77.17 for the gen-tie towers;
2. The developer shall also provide documentation to the Kern County Planning and Natural Resources Department demonstrating that the Federal Aviation Administration has issued a "Determination of No Hazard to Air Navigation" For the gen-tie towers. This documentation shall include written concurrence from the military authority responsible for operations in the flight area depicted in the Kern County Zoning Ordinance Figure 19.08.160 that all project components in the flight area would create no significant military mission impacts.
3. The developer shall also provide documentation to the Kern County Planning and Natural Resources Department demonstrating that a copy of the approved form(s) has been provided to the operators of Mojave Air & Space Port.
4. The developer shall also provide documentation to the Kern County Planning and Natural Resources Department demonstrating ~~that a copy of the approved form(s) has been provided to the operators of Mojave Air Space and Port.~~ that project components would create no significant impact to aircraft operations at Mojave Air & Space Port (MHV)."

6-E: The comment raises the concern that the Draft EIS/EIR land use discussion is incomplete on page 3.11-24. Page 3.11-24 has been revised as follows:

"The height of poles for the gen-tie line would likely range between 100 and 180 feet, and would not ~~to~~ exceed ~~200~~ 215 feet and would be required to adhere to FAA notification requirements of Code of Federal Regulation 77.17. Refer to EIS/EIR Section 3.4, *Airspace Management and Use*, for further information on the FAA."

6-F: The comment claims raises the concern that the discussion on page 3.11-26 is inaccurate in reference to gen-tie line pole height exemptions and consistency with the ALUCP. As noted in Response to Comment 5-B, page 3.11-26 has been revised as follows to clarify project consistency with the ALUCP:

"Depending on the final route, the gen-tie line may be constructed within Influence Zones D, E1, and E2 of the Mojave Air and Space Port. As described in Chapter 2, *Proposed Action, Project Description, and Alternatives*, poles associated with the gen-tie line may be up to ~~100-180~~ 215 feet tall, which would exceed the 100-foot height limit for structures in Zone E-1. However, as previously discussed, the ALUCP can provide~~s~~ an exemption to these height requirements for gen-tie lines after review which would be required as part of the FAA notification requirements of Code of Federal Regulation 77.17. Therefore, the gen-tie line would comply with the ALUCP."

6-G: The comment states that the conclusion of less than significant for Impact 3.11-1 is unsubstantiated because of an omission of ALUCP policies and the requirement for an airspace analysis. As noted in Response to Comments 6-E and 6-F, page 3.11-24 and 3.11-

26 have been revised to include the FAA notification requirements, which would include an airspace analysis.

6-H: The commenter notes their appreciation for the cumulative effects analysis provided in the Draft EIS/EIR. They further state that MHV has reviewed two other environmental documents associated with two other facilities that are within the MHV vicinity: 1) Eland 1 Solar Project; and 2) Sanborn Solar Project. The cumulative project list provided in Table 3-1 of Chapter 3, Environmental Analysis, includes related projects, both solar and non-solar projects, within Eastern Kern County and Los Angeles County that are either pending approval, approved, in construction or in operation at the time that the notice of preparation (NOP) was filed for the project (November 2017). As the NOP for the Eland 1 Solar Project was filed on July 2018 and the NOP for the Sanborn Solar Project was filed June 2019, which is after the NOP was filed for the project, these projects were not included as part of the cumulative projects list for the project in the Draft EIS/EIR. However, these two projects would now warrant consideration as part of the cumulative analysis for the proposed project. In addition, while the Sanborn Solar Project is within the 15 miles of the project site, the Eland 1 Solar Project is beyond this 15-mile radius of the project Site and, thus, is unlikely to contribute to cumulative impacts in relation to the proposed project. Generally, the construction, operation, and decommissioning of the Sanborn Solar Project, would have similar cumulative effects as the other solar and non-solar projects that were included in the cumulative project list provided in Table 3-1 of Chapter 3, Environmental Analysis. The project, in combination with cumulative projects, would continue to have significant and unavoidable cumulative impacts related to aesthetics and air quality. Table 3-1 on Page 3-9 of Chapter 3, *Environmental Analysis*, has been revised as follows:

41.	Sanborn Solar Project	300 MW	2,102 acres	Construction has not commenced

6-I: Please see Master Response 1, above.

Eastern Kern
Air Pollution Control District

Glen E. Stephens, P.E.
Air Pollution Control Officer

July 25, 2019

Janice Mayes, Planner 3
Kern County Planning and Natural Resources Department
2700 "M" Street Suite 100
Bakersfield, CA 93301

SUBJECT: Comments for Draft Environmental Impact Report for Edwards AFB Solar Project (PP18136)

Dear Ms. Mayes:

Eastern Kern Air Pollution Control District (District) is in receipt of the Draft Environmental Impact Report (DEIR) for the Edwards AFB Solar Project.

Commercial solar power generation facilities 10 acres and larger are required to submit a Fugitive Dust Emission Control Plan, Fugitive Dust Emission Monitoring Plan, and apply for an Authority to Construct prior to commencing construction of the facility. 7-A

If installation of the generation tie in line will require disturbing more than 10 contiguous acres of land, it would be considered a large operation, as defined in District Rule 402 (Fugitive Dust), and a Fugitive Dust Emission Control Plan must be submitted to the District prior to commencing construction of the tie in line. 7-B

Thank you for you cooperation in this matter. Should you have any questions, please telephone Samuel Johnson our office at (661) 862-5250.

Sincerely,

Glen E. Stephens, P.E.
Air Pollution Control Officer

GES:SJ:tf

Administrative Office: 2700 "M" Street, Suite 302, Bakersfield, CA 93301-2370
Phone (661) 862-5250 – Fax (661) 862-5251
www.kernair.org – ekapcd@kerncounty.com

Response to Comment Letter 7 – Easter Kern Air Pollution Control District

7-A: Thank you for your comments. The commenter confirms EKAPCD's receipt of the Draft EIS/EIR and notes that solar facilities 10 acres and larger are required to submit a Fugitive Dust Emission Control Plan and apply for an Authority to Construct prior to commencing construction of the facility. Additionally, stationary equipment that emits air pollutants may require a permit from the EKAPCD prior to installation and operation. As discussed in Section 3.3, *Air Quality*, of the Draft and Final EIS/EIRs, construction and operation of the proposed project would be conducted in compliance with applicable rules and regulations set forth by the EKAPCD, including all necessary permits. Please see pages 3.3-1 through 3.3-11 of the Draft EIS/EIR for further discussion regarding air quality permitting requirements applicable to the proposed project. This comment has been noted for the record.

7-B: Please see Master Response 1, above.

Comment Letter No. 8: AVEK (Antelope Valley Eastern Kern Water Agency)

ANTELOPE VALLEY - EAST KERN WATER AGENCY
AVEK
ESTABLISHED 1959
A PUBLIC AGENCY

August 28, 2019

Janice Mayes
Kern County Planning and
Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Subject: Notice of Draft Environmental Impact Report for the Edwards Air Force Base Solar Project by Edwards AFB Solar, LLC (PP18136)

The Antelope Valley-East Kern Water Agency (AVEK) appreciates the opportunity to comment on the Draft Environmental Impact Report (EIR) for the Edwards Air Force Base Solar Project (Project). We understand that the proposed Project would assist California in complying with the Renewables Portfolio Standard, which requires that by December 31, 2030, 50 percent of all electricity sold in the state shall be generated from renewable energy sources. It is also our understanding that the Project will assist California in meeting its greenhouse gas emissions reduction goals by 2020 and 2030 as required by the California Global Warming Solutions Act. 8-A

AVEK is committed to deliver reliable, sustainable and high-quality supplemental water to the Antelope Valley and East Kern County in a cost effective and efficient manner. We treat water from the California Water Project and transmit it through a large distribution system within our 2,400 square miles of Service Area.

After reviewing your EIR we have the following comments regarding the location of your Project Electrical Interconnection to Transmission Infrastructure, and AVEK's Infrastructure:

1. Edwards AFB Solar Project Tie-Route 1

AVEK has an underground 36" CML&C Transmission Pipeline running East-West thru an easement (APN 428-201-15) owned by AVEK located on Silver Queen Rd, approximately 3.0 mi east from CA SR-14. According to your plans, this Generation Tie crosses our easement. 8-B

2. Edwards AFB Solar Project Tie-Route 2

AVEK has an underground 36" CML&C Transmission Pipeline running East-West thru an easement (APN 428-181-24) owned by AVEK located on Silver Queen Rd, approximately 0.6 mi east from CA SR-14. According to your plans, this Generation Tie crosses our easement.

6500 WEST AVENUE N • PALMDALE, CALIFORNIA 93551
(661) 943-3201 • www.avek.org • info@avek.org

The mission of AVEK is to deliver reliable, sustainable and high quality supplemental water to the region in a cost-effective and efficient manner.

Comment Letter No. 8: AVEK (Antelope Valley Eastern Kern Water Agency)

3. Edwards AFB Solar Project Tie-Route 3

AVEK has Underground Facilities and a Pump Station on and near the intersection of Sierra Highway and Silver Queen Rd.

- Corner of Sierra Highway and Trotter Avenue. 36" CML&C Transmission Pipeline running North-South on Sierra Highway. According to your plans, this Generation Tie crosses Sierra Highway in the same location our Pipeline runs parallel to Sierra Highway.
- Corner of Sierra Highway and Reed Avenue. Two 36" CML&C Transmission Pipelines running East-West on Reed Avenue. According to your plans, this Generation Tie crosses Reed Avenue in the same location our Pipeline run parallel to Reed Avenue.
- Corner of Sierra Highway and Silver Queen Rd. 36" CML&C Transmission Pipeline running East-West on AVEK's easement (APN 429-170-32); 18" Welded Steel Transmission Pipeline running North-South parallel to Sierra Highway; Pump Station on AVEK property (APN 427-140-02), a quarter a mile North from Silver Queen Rd. According to your plans, this Generations Tie turns West at this intersection.

8-B

Please refer to attached exhibits for details on the notes above.

We want to request more information on how you are going to guarantee the protection of our pipes during construction and during regular operations. We are concerned about the integrity of the pipe, and the damage that may be caused by direct voltage. We also request that you to contact us for getting an agreement about crossing our easements, this is very important.

8-C

Please submit a proposed plan to our Engineering Department explaining how you will address the concerns listed above. You can contact me directly (bmelendez@avek.org) or contact Justin Livesay (jlivesay@avek.org) our Engineering Manager to submit this request.

We look forward to working with Edwards AFB Solar, LLC on completion of the proposed Project. If you have any questions regarding the above comments, please contact me at (661) 943-3201, extension 0230.

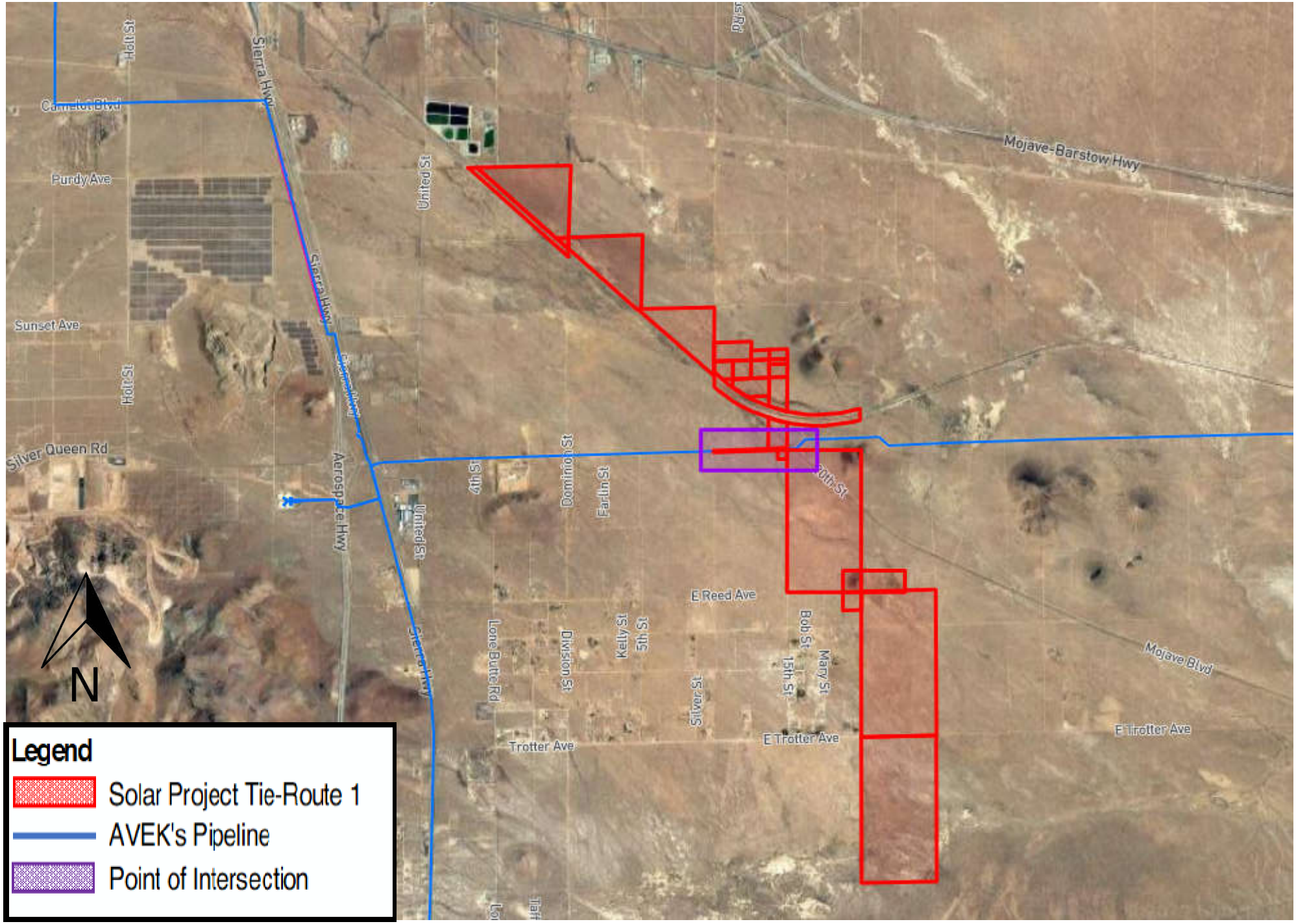
8-D

Sincerely,

Benjamin Melendez
Engineering Technician
Antelope Valley-East Kern Water Agency
6500 West Avenue N, Palmdale CA 93551
Phone: 661-943-3201 | Ext 0230
Fax: 661-943-3204

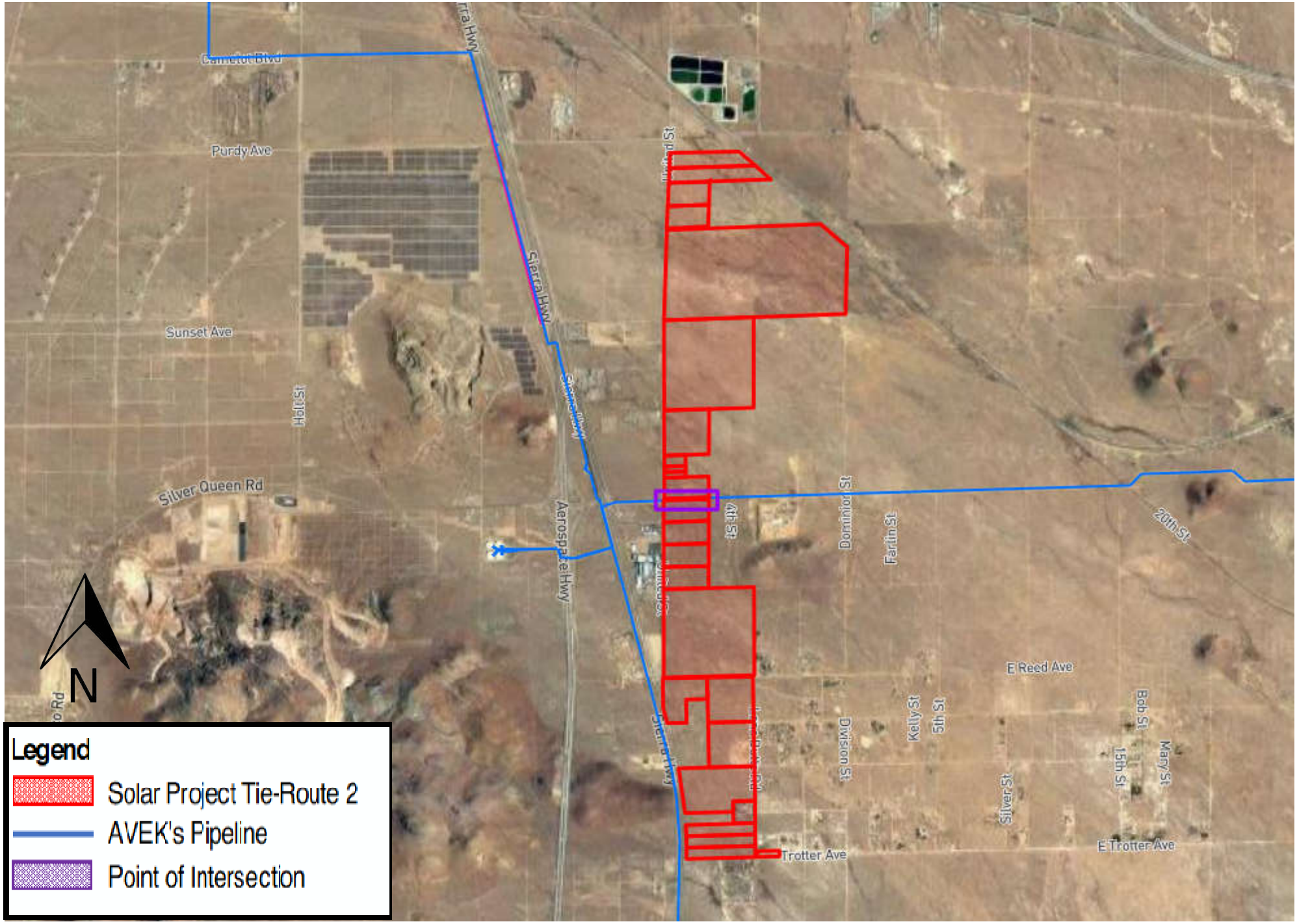
AVEK Infrastructure on path of Edwards AFB Solar Project Tie-Route 1

Comment Letter No. 8: AVEK (Antelope Valley Eastern Kern Water Agency)



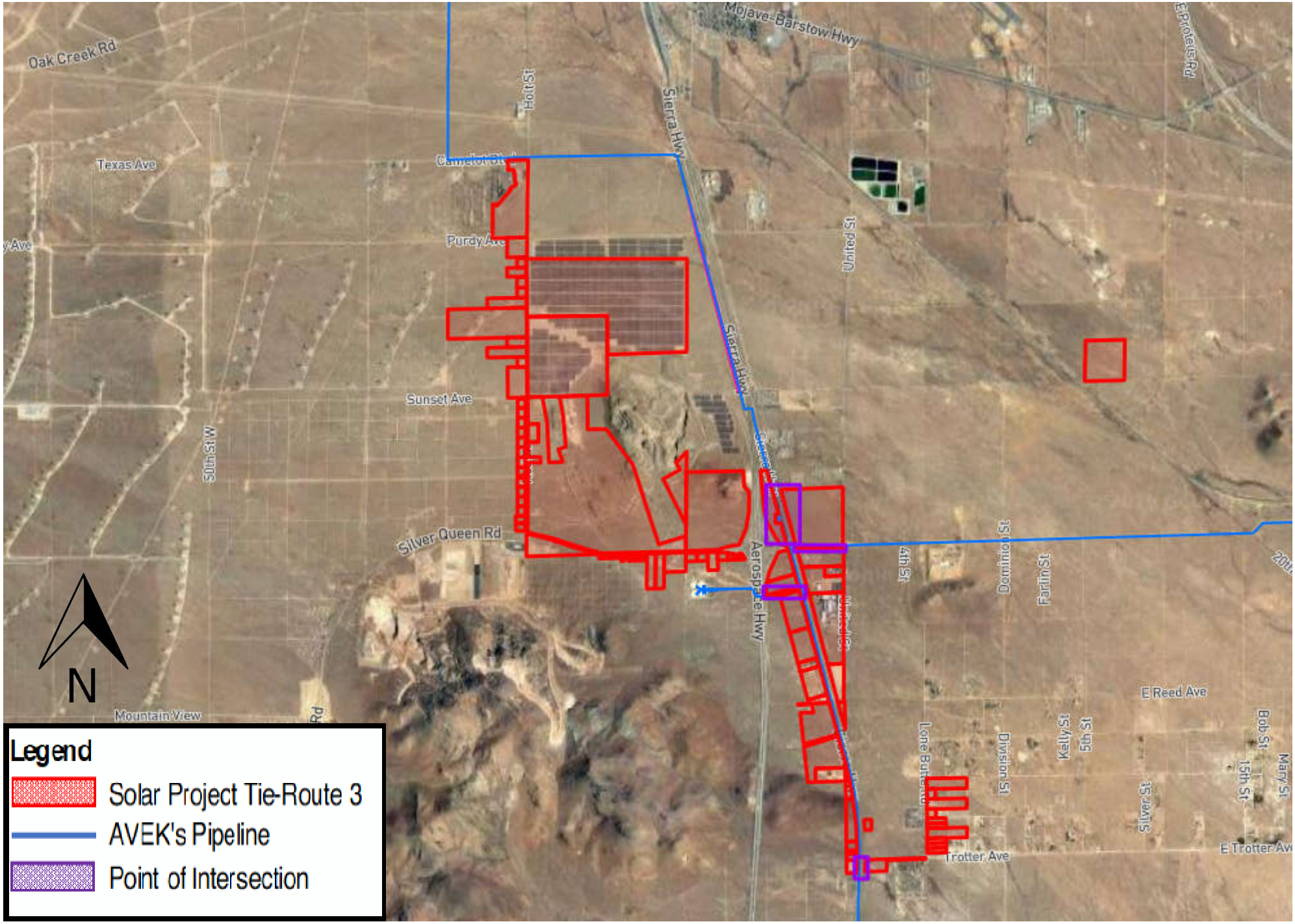
AVEK Infrastructure on path of Edwards AFB Solar Project Tie-Route 2

Comment Letter No. 8: AVEK (Antelope Valley Eastern Kern Water Agency)



AVEK Infrastructure on path of Edwards AFB Solar Project Tie-Route 3

Comment Letter No. 8: AVEK (Antelope Valley Eastern Kern Water Agency)



Response to Comment Letter 8 – Antelope Valley-Eastern Kern Water Agency

8-A: Please see Master Response 1, above.

8-B: Please see Master Response 1, above.

8-C: This comment requests additional information on construction protocols the project would take and the measures to ensure protection of existing AVEK pipelines. Concern is expressed regarding integrity of the pipelines, and the potential damage from direct voltage. The commenter also requests coordination to establish an agreement to cross AVEK easements. The comment is noted and included as part of the record. The applicant will coordinate with AVEK and also would be required by California Law (CA Government Code 4216) to contact DigAlert (notification system for all utility agencies in the area) prior to any subsurface earthwork activities.

8-D: Please see Master Response 1, above.

From: Janice Mayes <MayesJ@psb.kerncounty.com>
Sent: Friday, June 21, 2019 3:41 PM
To: BREWER-ANDERSON, ANDREA B NH-03 USAF AFMC 412 CEG/CEVA; Jason Ricks; Aaron Weiner; Cristina Gispert
Cc: Terrance Smalls
Subject: FW: Comments on Edwards AFB Solar Project

Hi Andrea/Jason/Cristina/Aaron:

Please see the attached comment from a concerned citizen.

Regards,

Janice Mayes, Planner
Kern County Planning & Natural Resources Dept.
County of Kern Public Services Building
2700 "M" Street, Suite 100
Bakersfield, CA 93301-2370
Telephone: 661-862-8793
mayesj@kerncounty.com

-----Original Message-----
From: Roy Woolsey[redacted]
Sent: Friday, June 21, 2019 6:58 AM
To: Planning Department <Planning@kerncounty.com>; Janice Mayes <MayesJ@psb.kerncounty.com>
Cc: Patty Woolsey[redacted]
Subject: Comments on Edwards AFB Solar Project

Kern County Planning and Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Attention: Janice Mayes

I am writing to provide comments on the Edwards AFB Solar Project. I am the owner of approximately 120 acres at the southeast corner of United Street and Silver Queen Road (APNs 429-101-30, -31, -32, -33, -34 and -36) near the town of Mojave in Kern County. 9-A

I am strongly opposed to N/S Option 2 for the generation tie-line route. I believe that if the Edwards AFB Solar Project goes forward, N/S Option 1 for that tie-line route should be selected, for the following reasons:

1. The Option 1 route is in general substantially further from the town of Mojave than is Option 2. The Option 1 route is through an area that is, and will remain for a long time into the future, much less developed than Option 2. 9-B

2. A large portion of the Option 1 route is along BNSF railroad right-of-way, which is a much more natural location for high tension power lines than along public streets such as United Street and Lone Butte Road. 9-C

3. The Option 2 route already has significant development along part of it which would be adversely affected by these large, tall power poles with extremely high tension (230 kV) power lines strung between them.
For example, there are already some businesses along the west side of United Street. 9-D

4. Future development of the area would be severely impacted by the presence of these power lines. The above-itemized parcels that I own include a half mile of United St. frontage on the east side of United Street, and I understand that these power lines are proposed for the east side of United Street. In the future, as the town of Mojave grows and I proceed to develop this property, its usefulness will be severely impacted by the proposed large, tall power poles with extremely high tension power lines strung between them. Many people in our society are concerned about EMF and the adverse effects EMF may have on the human body, so these people will be hesitant to drive or walk under these high-tension power lines to get from United Street to businesses on my property. 9-E

5. The presence of these high tension power lines with their strong EMF immediately adjacent to my property and the need for customers of future businesses on my property to pass under them would substantially diminish the value of my property. This would result in a taking of private property without just compensation, which is forbidden by the Fifth Amendment to the U.S. Constitution. I would vigorously fight such illegal taking, to defend the value of my property. 9-F

6. I do not believe the 55-foot right-of-way which Kern County claims to have along United Street is wide enough to accommodate the large, tall power poles with extremely high tension (230 kV) power lines strung between them and not provide a danger, from the EMF and the risk of downed power lines, to either people on Union Street or the private properties along the street. The same argument applies to Lone Butte Road and West Reed Avenue, and the properties along those streets. And I would NOT be willing to grant any easement over part of my property to provide a wider path for the power lines, even with substantial compensation, because these power lines would substantially diminish the value of my property. 9-G

For these reasons, I strongly object to the N/S Option 2 and trust that this tie-line route will NOT be chosen.

Yours very truly,
Roy B. Woolsey

[redacted]

Response to Comment Letter 9– Roy Woosley

9-A: Please see Master Response 1, above.

9-B: Please see Master Response 1, above.

9-C: Please see Master Response 1, above.

9-D: Please see Master Response 1, above.

9-E: Please see Master Response 1, above.

9-F: Please see Master Response 1, above.

9-G: Please see Master Response 1, above.

How to Comment:

Hardcopy: Use the form on the other side of this sheet. Please fold and staple this form and mail to the address below. **Comment cards must be post-marked by July 26, 2019**.

Email: 412tw.pae@edwards.af.mil Make sure subject line reads "Edwards AFB Solar Project"

☐ Public comments, including names and street addresses of respondents, will be available for public review at Kern County Planning and Natural Resources Department, 2700 "M" Street, Suite 100, Bakersfield, CA 93301, during regular business hours (8:00 a.m. to 5:00 p.m.), Monday through Friday, except holidays. Individual respondents may request confidentiality. **If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you MUST check this box.** Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Gary Hatch
Environmental Public Affairs
Bldg. 1405, Room 400
Edwards AFB, CA 93524

Edwards AFB Solar Project

Public Comment Card

Edwards AFB Solar Project

Commenter Name: LUKE BRAND **Date:** JUNE 27, 2019

Address: [redacted]

Comment: REGARDING THE EDWARDS AFB SOLAR PROJECT:

AS A LIFETIME RESIDENT OF THIS VALLEY, WHO GREW UP IN KERN COUNTY, I WOULD LIKE TO ENCOURAGE ALL INTERESTED PARTIES TO APPROVE THIS SOLAR PROJECT. THIS PROJECT WILL BENEFIT THE CONSTITUENTS OF KERN COUNTY IN THE FORM OF LOCAL JOBS AND MUCH NEEDED "GREEN" ELECTRICITY. 10-A

THANK YOU FOR YOUR TIME.

LUKE BRAND
LANCASTER BUSINESS REPRESENTATIVE
I.U.O.E. LOCAL 12

Response to Comment Letter 10 – Luke Brand

10-A: Please see Master Response 1, above.

Law Offices of John A. Belcher

[redacted]

July 18, 2019

Via Email

Janice Mayes
Planning Department
Kern County
2700 M Street, Suite 100
Bakersfield, CA 93301
(661) 862-8793
MayesJ@kerncounty.com

RECEIVED
JUL 22 2019
Kern County Planning &
Natural Resources Dept.

Re: Protest re proposed Edwards Air Force Base Solar Project, SCH# 2017111079

Dear Ms. Mayes:

This law firm represents Save Our Mojave, a 501(c)(3) non-profit organization working to raise public awareness about some of the most pressing issues facing California's deserts, including unchecked damage to the environment and wildlife.

Save Our Mojave has reviewed the Draft Environmental Impact Staement/Environmental Impact Report ("EIR") for the proposed Edwards AFB Solar Project (the "Project"). The Edwards AFB Solar Project calls for a Franchise Agreement with the County of Kern to facilitate the construction, and operation of an up to 3,500 acres 600 MW solar facility. The Project would be supported by a 230-kV overhead/underground transmission corridor. The transmission line would generally be aligned from the north/south and then east/west where it ultimately would be connected to the existing privately-owned Westwind Substation in the first phase of the Project and then to the SCE Whirlwind Substation in subsequent phases of the project. The Project's permanent facilities would include up to 2 million solar panels, service roads, security fencing, a power collection system, battery storage, communication cables, overhead and underground transmission lines, electrical switchyards, a substation, and an operations and maintenance facility. 11-A

The EIR describes the proposed Project and assesses the potential adverse impacts on the surrounding physical environment, but concludes that the effects could be mitigated to "less-

than-significant" or "significant but unavoidable" levels. After investigation and after review of publicly available documents, Save Our Mojave believes that the Project does not adequately mitigate the impact of the Project on the environment and local wildlife, and neither does it adequately explore the cumulative impacts of this Project relative to others in the area. 11-A

"CEQA does not require technical perfection in an EIR, but rather adequacy, completeness, and a good-faith effort at full disclosure." CEQA Guidelines § 15003(I). Absent complete environmental impact analysis of the effect on the local environment and wildlife, the EIR is not a "good faith effort at full disclosure."

The EIR fails to set forth an accurate and adequate environmental baseline upon which to measure its impacts. The EIR's failure to adequately describe the existing setting contravenes the fundamental purpose of the environmental review process, which is to determine whether there is a potentially substantial, adverse change to the existing setting. CEQA requires that a lead agency include a description of the physical environment conditions in the vicinity of a project, as they exist at the time environmental review commences. Because the EIR did not perform adequate surveys of the biological resources on the site, the EIR fails to meet this requirement.

Our primary concern is for the sensitive plant and animal species that occupy, or have high potential to occupy, the proposed Project area. Those species include, but are not limited to: 11-B

- Burrowing owl
- Desert tortoise
- Costa's hummingbird
- Alkali mariposa Lily
- Mojave spineflower

Long-term studies would need to be conducted on the sensitive species in the area in order to determine both the impact that this Project could have, but also what the impact has already been of the numerous surrounding solar projects. The EIR fails to provide a sufficient description of the wildlife that may be impacted by Project construction and development because the surveys performed were inadequate. While the EIR does detail some of the species that will be impacted, the public cannot adequately assess the Project's impacts without a complete description of all the species that will be impacted by Project construction and development.

We are deeply concerned about the impact of the Project on the area's burrowing owl population. Previous studies on the project site were contained within one year, so are relatively short-term, and preconstruction or construction surveys would not accurately represent any ongoing, continuous effects on the local population. 11-C

Western burrowing owls are at risk of going extinct in some areas of California, and habitat degradation and fragmentation are the most pressing issues facing the species. This project has a potentially significant impact.

> Primary threats are habitat loss due to anthropogenic activities, reductions in abundances of burrowing mammals, and contaminants... Conservation efforts should focus on protection of suitable habitats in desert, grassland, and shrub-steppe environments.

U.S. Fish and Wildlife Service, Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States § 24 (2003). 11-D

As burrowing owls are ground nesting, there are almost no possible methods of mitigation, and any amount of disturbance in their direct habitat would eliminate them from that area. Attempts have been made to relocate burrowing owls in other areas of California, but the success rates have been inconsistent. Attempts have also been made to create imitation burrows to attract owls to a new area, but those have also been mostly unsuccessful. San Diego Zoo conservationists affirm that current mitigation strategies have no proven record of success and further research is required into the best methods of mitigation for this species. 11-E

Protection of the burrowing owls themselves is not the only relevant factor, as the owls rely heavily on ground squirrels as a primary source of prey, and on their burrows for nesting and protection. The Project could also potentially impact local ground squirrel populations, but this analysis is absent from the EIR, except to mention the possible impact. The Mohave ground squirrel found in this area is a species classified as near threatened. Further surveys need to be done in order to better understand the permanent direct and indirect impacts on the area ground squirrel population as "[t]he conservation of burrowing mammals is essential to improve the status of Burrowing Owls." Id. 11-F

The Project does consider its impact on the burrowing owl population and offers solutions to mitigate any harm to their habitat. During burrowing owl breeding season, any active burrows will be noted, and workers must stay 200 meters away from the burrow. However, outside of breeding season, workers must only stay 50 meters away. Furthermore, if 11-G

this solution proves to be inadequate, the EIR states that workers should attempt to relocate the burrowing owls. The form of relocation described in the EIR is passive relocation, as the EIR states the owls will only be moved if they want to go. According to a report from San Jose State University titled "Passive Relocation: A Method to Preserve Burrowing Owls on Disturbed Sites", passive relocation in this instance is not adequate mitigation as it describes:

> Although passive relocation appears to be a successful way to relocate birds, this method should be not used to compensate for lost burrows if the impact to nest burrows can otherwise be avoided. Nor is passive relocation an adequate mitigation if enough adjoining foraging habitat is not preserved.

J. Field Ormthol., 66(1):99-106

Therefore, as some of the adjoined foraging habitat will be destroyed by the Project, passive relocation will not be enough to preserve the burrowing owls. 11-G

We are also deeply concerned with the impact of the Project on the habitat of the desert tortoise, a reptile listed as threatened in 1990 [55 Federal Register (FR) 12178]. The desert tortoise spends much of its life in burrows, even during seasons of activity. The desert tortoise takes 12-20 years to reach sexual maturity, meaning that it will take decades for them to breed and recover population numbers.

The EIR makes specific mention of protections it will take for the desert tortoise, but because long-term surveying of the Project site has not been done, it is impossible to know whether the Project site is directly in the habitat of the desert tortoise. Historically, solar projects have been detrimental to the desert tortoise population. 11-H

> The most apparent threats to the desert tortoise are those that result in mortality and permanent habitat loss across large areas, such as urbanization and **large-scale renewable energy projects**, and those that fragment and degrade habitats, such as proliferation of roads and highways, off-highway vehicle activity, and habitat invasion by non-native invasive plant species.

U.S. Fish and Wildlife Service, Status of the Desert Tortoise and Its Critical Habitat § 1 (1994) (emphasis added)

In April 2011, the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project released a Revised Biological Assessment for the Bureau of Land Management regarding the 11-I

desert tortoise. The Project had disrupted the habitat of the desert tortoise and was required to create a Proposed Action plan for protecting the desert tortoise. Such a plan exists within the EIR as well but without long-term surveying of the Project site in order to make sure no desert tortoises are present, the Project could disrupt the habitat of the desert tortoise as well.

The plan that the Project has developed to protect the desert tortoise is insufficient. Similar to the plan for burrowing owls, the plan for desert tortoises involves relocating them. However, the desert tortoise has proven to be difficult to relocate in the past. At the Ivanpah SEGS, desert tortoises that were relocated attempted to return to their old habitat, which was surrounded by a fence. We are also concerned about the hatchling desert tortoises, which have not developed a hard enough shell to protect them from predators. These hatchlings cannot be relocated immediately, and must be cared for by a biologist until they become old enough to survive on their own. There is no mention of measures to care for hatchling desert tortoises in the EIR. 11-I

Protections that the Project includes for the desert tortoise include a Worker Environmental Awareness Training and Education Program which describes "the legal protection status of the species, the definition of 'take' under the Federal Endangered Species Act, measures the project proponent is implementing to protect the species, reporting requirements, and specific measures that each worker shall employ to avoid take of wildlife species, and penalties for violation of the Federal Endangered Species Act." (EIR ES-29) However, the report does not outline what these specific measures will be, or for how long the workers will undergo training. Without these details, there is inadequate information to discern if the Project will mitigate the disruption of the desert tortoise's habitat. 11-J

The mitigation measures which the EIR takes in case of encounters with the desert tortoise are insufficient. The EIR states that there will be an authorized biologist on site to ensure the protection of the desert tortoise. In the instance that the biologist in unable to monitor all desert tortoises, he or she will approve other monitors. However, these monitors do not need to be biologists, and despite that they are approved by a biologist, they do not have the training and knowledge to adequately protect the desert tortoises. Furthermore, these monitors are given authority to instruct others at the Project site on how to protect the desert tortoise. Under-trained individuals may handle the desert tortoise quite often, as the EIR states, "nothing prohibits any individual from handling a desert tortoise when necessary to protect the safety or health of the animal when it is in immediate danger." (EIR ES-33) 11-K

Neither does the EIR satisfactorily examine or mitigate the impact on nesting birds such as the lesser nighthawk and Costa's hummingbird. Though the conservation status of these 11-L

species of birds is of least concern, solar arrays have the potential to kill thousands of birds, which could dwindle their population. The report includes a Worker Environmental Awareness Training and Education Program, which teaches workers "information on the life history of the desert tortoise and **migratory** birds." (EIR 3.5-63) (emphasis added) Information about birds which may not migrate, such as the Costa's hummingbird, will be absent from this program. 11-L

The breeding and wintering range of the Costa's hummingbird overlaps with the Project site. The Costa's hummingbird is common in the Project site, and despite its conservation status being of least concern, its population has been decreasing over the past few decades. According to Partner's in Flight, an international organization emphasizing the conservation of birds, "Costa's Hummingbirds are relatively common, but their populations declined by around 1% per year between 1968 and 2015 according to the Breeding Bird Survey and experienced a 51% decline since 1970."

The Costa's hummingbird makes its nest in shrubs three to seven feet off the ground using strips of bark, small leaves, and the wooly part of sunflowers. As the report states that some vegetation will need to be removed or trampled for the Project, this will directly disrupt the Costa's hummingbird's habitat. The Project lists issues discussed in the document but does not include vegetation in that list; in fact, vegetation is one of the few issues not selected as discussed. The Project states that it "may impact sensitive plant species including alkali mariposa-lily, desert cymopterus, recurved larkspur, Barstow woolly sunflower, and sagebrush loeflingia", plants which are used in the nests of Costa's hummingbirds. 11-M

The report also states that the Project will conduct surveys during nesting seasons to check for active nests. However, the pre-construction surveys that the Project will conduct need to be done far more in advance. As the EIR states,

> During the avian breeding season (1 February – 31 August), a qualified biologist shall conduct a preconstruction avian nesting survey no more than 3 days prior to initial vegetation clearing. Surveys need not be conducted for the entire project site at one time; they may be phased so that surveys occur within 3 days prior to clearing of specific areas of the site. No pre-construction surveys are required outside of the avian breeding season.

Environmental Impact Report for the Edwards AFB Solar Project (2019) 11-N

Furthermore, if nesting materials are destroyed before nesting season, the birds will not be able to nest. Pre-construction surveys of the area are not enough to assure the protection of 11-O

Costa's hummingbirds. Long-term surveys must be done to assure that the Project is not disrupting the habitat of the Costa's hummingbird. 11-O

Not only would this Project destroy vegetation that is potentially viable nesting and foraging territory, but solar arrays have been shown to be incredibly dangerous for birds. The larger the solar field, the more likely for high amounts of avian fatality. Discussion of this aspect of heat and glare is completely absent from the EIR. Long-term surveys of these bird species in the area, including all surrounding operational projects, need to be conducted, and the element of heat and glare from the solar panels needs to be incorporated. For a large portion of migratory and nesting birds in California, there have been greatly reduced population numbers and range, especially due to habitat encroachment and fragmentation. Even small areas can be essential for nesting and foraging. Without updated surveys, this law firm cannot be certain of the level of impact that the Project would have on these species. According the to the U.S. Fish and Wildlife Service: 11-P

> Millions of acres of bird habitat are lost or degraded every year due to development, agriculture, and forestry practices. These rapidly accelerating impacts can be mitigated only through habitat restoration and protection. In addition, millions of birds are directly killed by human-caused sources such as collisions with man-made structures... Natural and human-caused mortality impacts are exacerbated by the landscape alterations resulting from a changing climate. Birds in every habitat will be affected by natural and human-caused sources, so conserving migratory bird populations requires a multi-faceted, coordinated approach by governments, conservation organizations, industry, and the general public.

U.S. Fish and Wildlife Service, Threats to Birds § 1 (2018).

Though this letter only discussed a few of the animal species that will be impacted by the Project, there is a long list of animals impacted by the Project. The EIR outlines this list of animals, which includes: 11-Q

- Northern California legless lizard
- Desert tortoise
- Golden eagle
- Short-eared owl
- Burrowing owl
- Ferruginous hawk

- Swainson's hawk
- Mountain plover
- Northern harrier
- Prairie falcon
- Loggerhead shrike
- Lawrence's goldfinch
- Le Conte's thrasher
- Pallid bat
- Townsend's big-eared bat
- Spotted bat
- Tehachapi pocket mouse
- American badger
- Desert kit fox
- Mohave ground squirrel

11-Q

All of the animal species listed above are considered special status wildlife species and are protected under the Endangered Species Act of 1973, which states its purpose as follows: "The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved [...]". This solar project poses a direct threat to the species protected under this act, and development in the habitat of these species is against the goal of conservation. The fact that there are threatened and endangered species in the Project area should alone be enough to stop the Project from moving forward.

11-R

The impact on vegetation must be an issue to be discussed in the Project if the EIR is to provide a report of "good faith effort at full disclosure." According to the EIR, "[the proposed Project] would result in the clearing of land and potential complete removal of the existing desert ecosystem over the entire project site." (EIR 3.8-35) This is potentially catastrophic for the sensitive plants and animals that live in this desert ecosystem.

11-S

The EIR states that the biological resources of the Proposed Project will have "[d]irect and indirect impacts to special status plant species." One of the proposed alternatives is to have no action/no Project, which is the only alternative which will prevent damage to existing biological resources. Another alternative is for the Project to only occur in areas with existing development creating minimal damage to the environment. Our firm encourages the Project to move forward with these alternatives as to prevent damage to existing biological resources, including sensitive plant species. These sensitive plant species include:

- Horn's milk-vetch
- Lancaster milk-vetch
- Round-leaved filaree
- Alkali mariposa-lily
- White pygmy poppy
- Mojave spineflower
- Desert cymopterus
- Recurved larkspur
- Rosamond eriastrum
- Barstow woolly sunflower
- Red Rock poppy
- Pale-yellow layia
- Sagebrush loeflingia
- Piute Mountains navarretia
- Charlotte's phacelia
- California alkali grass
- Latimer's woodland-gilia
- Coves' cassia

11-S

While revegetation plans are in place, they are not enough to ensure the protection of these sensitive plant species. The proposed alternatives to move the Project to an area that is already developed or to cease the Project entirely are the only reasonable solutions. 11-T

The Project will also result in significantly compromised air quality in the area throughout the construction process, and potentially once the Project is completed. Removal of stabilized soils and biological soil crust creates a destructive cycle of airborne particulates and erosion. As more stabilized soils are removed, blowing particulates from recently eroded areas act as abrasive catalysts that erode the remaining crusts thus resulting in more airborne particulates. 11-U

Noise pollution, like air pollution, has significant health implications. Construction and traffic noise are some of the largest producers of noise pollution. Prolonged exposure to noise pollution can lead to hypertension and heart disease, hearing loss and consequential sleep disturbances. Noise pollution does not only adversely affect human lives. Wildlife, especially birds, is heavily impacted by increased noise pollution. Communication, mating behavior, hunting and survival instincts of animals are altered by excessive noise. 11-V

In addition, according to the EIR, "[the proposed Project] would result in GHG emissions from the construction, operation, and maintenance of the project." (EIR 3.8-34) Within the construction of the Project, "GHG emissions would be generated onsite by off-road construction equipment and vehicles (e.g., excavators, tractors, trenchers, forklifts, cranes) that would be used to prepare the project site and construct the solar facility and associated gen-tie line, and offsite by vehicles that would transport workers to the work sites and haul panels and various materials and supplies to and from the site." Id. Within the operation of the Project, "[l]ong-term GHG emissions would be generated from motor vehicle trips to and from the project site; energy use (natural gas or electricity consumed by the project); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment." (EIR 3.8-35) During the 24-month decommissioning period of the Project, "It is anticipated that GHG emissions that would be associated with decommissioning of the [P]roject would be similar to those that would be generated during the construction phase of the [P]roject". (EIR 3.8-37) 11-W

The EIR needs to go farther in addressing the spike in greenhouse gas emissions during the construction, operation, and decommissioning periods. Due to the use of heavy construction equipment, unsafe levels of air pollutants would have an impact on the surrounding community and wildlife during that time. Simply ensuring that the construction equipment is in good working order does not seem like it will effectively mitigate the high levels of greenhouse gas emissions, especially if enforcement was to be at all substandard.

The EIR indicates that several mitigation measures have been deemed necessary in order for the Project to avoid making a significant negative impact on the surrounding environment. The language employed in addressing these potential impacts misguides the reader and downplays the significant risks inherent in the implementation of this project. The requirement of so many mitigation measures indicates how damaging the project has the potential to be. 11-X

The analysis failed to even address neighboring projects or the combined impact of the activities at Edwards Air Force Base. The analysis cannot withstand scrutiny, because here the lead agency and developer made no attempt to accurately describe cumulative conditions despite the existence of relevant data. The failure is particularly pronounced because it is not possible to determine the significance of an impact without actual data. The data needs to include the ongoing impact and effects of the surrounding projects as that is the only way to determine the true cumulative impact. 11-Y

The case law is in accord. In Kings County Farm Bureau v. City of Hanford [(1990) 221 Cal.App.3d 692, 729, 270 Cal.Rptr. 650], the Court of Appeal found the analysis of cumulative project impacts on water resources inadequate where it provided no information regarding the expected groundwater impacts of nearby energy projects except to say they "would impact regional water sources, but these impacts would be lessened by numerous programs and [conservation measures]."

The absence of data was fatal. The court held that "[a]bsent some data indicating the volume of ground water used by all such projects, it is impossible to evaluate whether the impacts associated with their use of ground water are significant and whether such impacts will indeed be mitigated by the water conservation efforts upon which the EIR relies." [221 Cal.App.3d at 729-730].

Also relevant is Communities for a Better Environment v. California Resources Agency [(2002) 103 Cal.App.4th 98, 126 Cal.Rptr.2d 441]. The Court invalidated certain CEQA provisions and clarified Kings County Farm Bureau v. City of Hanford [(1990) 221 Cal.App.3d 692, 270 Cal.Rptr. 650].

In Kings County, the Court rejected the cumulative analysis prepared for a proposed coal-fired cogeneration plant in which the lead agency determined the project's impact on air quality was not cumulatively considerable because it would contribute less than one percent of area emissions for all criteria pollutants. [221 Cal.App.3d at 718-719.] The court criticized the focus on the ratio between the project's impacts and the overall environmental problem, rather than on the combined effect of the project in addition to already adverse conditions. Under this (impermissible) approach, which the court dubbed the "ratio theory," "the greater the overall problem, the less significance a project has in a cumulative impact analysis." [221 Cal.App.3d at 721.] Instead of trivializing a project's impacts by comparing them to the impacts of other past, present, and probable future projects, CEQA requires the lead agency to first combine the impacts. When this is done properly, the EIR may find that the scope of the environmental problem is so severe that even a minuscule incremental change would be cumulatively considerable and thus significant. 11-Y

An adequate discussion of cumulative impacts must use one of the following methods, known respectively as the "list" approach and the "summary of projections" (or "plan") approach: (1) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (2) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect...

[Guidelines § 15130(b)(l).] These represent two distinct ways of identifying the "other projects" that add to the proposed project's incremental impacts.

The California Supreme Court has explained that the requirement to assess past projects "signifies an obligation to consider the present project in the context of a realistic historical account of relevant prior activities that have had significant environmental impacts." [Environmental Protection Information Center v. California Dept. of Forestry & Fire Protection [(2008) 44 Cal.4th 459,524, 118 Cal.Rptr.3d 352].] To do this effectively, an EIR "must reasonably include information about past projects to the extent such information is relevant to the understanding of the environmental impacts of the present project considered cumulatively with other pending and possible future projects." [44 Cal.4th at 525.]

As written, the EIR glosses over the aggregate environmental impacts of the Project and misleads the reader through words such as "may" and "potentially." This Project cannot be viewed independently from other developing Projects in the region. The EIR needs to address the cumulative effects of the Project in relation to other nearby projects. 11-Y

> The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

CEQA Guidelines § 15355(b). Greenhouse gas emissions, noise and air pollution, and habitat fragmentation are aggregate and have cumulative effects. It would be a massive oversight for this Project to be allowed to move forward without fully analyzing its impact in relation to the overall impact of other projects in the region that are currently in development or in the planning stages.

For all the reasons stated above, we oppose the project as currently proposed. The current EIR misleads the reader as to the impact of the Project, and only a rewritten cumulative impacts analysis will allow the public to understand the true impact of the Project. 11-Z

Sincerely,

John A. Belcher

Response to Comment Letter 11 – Law Offices of John A. Belcher

11-A: Please see Master Response 1, above.

11-B: The commenter suggests that the Draft EIS/EIR failed to adequately describe the existing settings as adequate surveys were not conducted for burrowing owl, desert tortoise, Costa's hummingbird, alkali mariposa lily and Mojave sunflower. The commenter further requests additional surveys for these species to determine both the impact of this project as well as surrounding projects.

Below is a summary of surveys conducted and anticipated impacts for the special-status plant and animal species listed in comment 11-B. Additionally, as discussed in the Draft EIS/EIR Section 3.5, *Biological Resources*, the Draft and Final EIS/EIRs identifies the special-status plant species having a moderate- to high-potential to occur on the project site (see Table 3.5-4) and special-status wildlife species having a low- to moderate-potential to occur on the project site (see Table 3.5-5). Similarly, Subsection 3.5.3, Impact and Mitigation Measures, includes an analysis of the project's potential impacts on special-status plant and animal species. A summary of the Draft and Final EIS/EIR's discussion on the special-status species identified in comment 11-B is provided below.

Burrowing owl:

The information and data presented in Draft EIS/EIR Section 3.5, *Biological Resources*, pages 3.5-31 and 3.5-39, was derived from a combination of burrowing owl surveys following CDFW protocol and noted occurrences while conducting biological resources survey for the project. In summary, all areas of the site were investigated and the appropriate level of surveys for burrowing owl was conducted. Thus, the Draft EIS/EIR adequately discusses burrowing owl and analyzes impacts to the species in Section 3.5 *Biological Resources*.

Desert tortoise:

The information and data presented in Draft EIS/EIR Section 3.5, *Biological Resources*, pages 3.5-28, 3.5-30, and 3.5-37, was derived from a combination of desert tortoise surveys following USFWS protocol, noted occurrences while conducting biological resources survey for the project, and a literature review. In summary, all areas of the site were investigated and the appropriate level of surveys for desert tortoise was conducted. Thus, the Draft EIS/EIR fully discusses desert tortoise and analyzes impacts to the species in Section 3.5, *Biological Resources*, of the Draft EIS/EIR, pages 3.5-48, 3.5-61, and 3.5-63.

Costa's hummingbird:

Costa's hummingbird is not a state- or federally-listed species, nor is it a state Species of Special Concern; however, it is considered a federal bird of conservation concern. Nonetheless, to minimize impacts to special-status birds and birds protected under the Migratory Bird Treaty Act and California Fish and Wildlife, which includes Costa's hummingbird, the project proponent shall implement a bird conservation strategy as required in accordance with Mitigation Measure MM 3.5-7.

Alkali mariposa lily:

The information and data presented in Draft EIS/EIR Section 3.5, *Biological Resources*, pages 3.5-26, 3.5-27, and 3.5-35, was derived from a combination of focused plant surveys and other biological resource surveys conducted on the project site. In summary, all areas of the site were investigated and the appropriate level of surveys for alkali mariposa lily

was conducted. Thus, the Draft EIS/EIR fully discusses alkali mariposa lily and analyzes impacts to the species in Section 3.5, *Biological Resources*, of the Draft EIS/EIR, pages 3.5-47 and 3.5-57.

Mojave spineflower:

The information and data presented in Draft EIS/EIR Section 3.5, *Biological Resources*, pages 3.5-26, 3.5-27, and 3.5-35, was derived from a combination of focused plant surveys and other biological resources survey conducted on the project site. In summary, all areas of the site were investigated and the appropriate level of surveys for Mojave spineflower was conducted. Thus, the Draft EIS/EIR fully discusses Mojave spineflower and analyzes impacts to the species in Section 3.5, *Biological Resources*, of the Draft EIS/EIR, pages 3.5-43, 3.5-53, and 3.5-57.

A large number of cumulative projects have occurred or are proposed in the Regional Setting area surrounding the proposed project, as listed in Table 3-1. Cumulative impacts to special-status species are adequately discussed beginning on Page 3.5-64 and acknowledges that the proposed project adds to the direct removal of special-status plants and wildlife in the region. However, the implementation of Mitigation Measures MM 3.5-1a through MM 3.5-13a for the solar facility portion of the project and Mitigation Measures MM 3.5-1b through MM 3.5-15b for the gen-tie portion of the project would reduce these impacts to a less-than-significant level.

11-C: Please see Master Response 1, above.

11-D: Please see Master Response 1, above.

11-E: Please see Master Response 1, above.

11-F: Please see Master Response 1, above.

11-G: The commenter suggests that passive relocations is not an acceptable way to mitigate for impacts to burrowing owls as it pertains to their burrows and foraging habitat. Mitigation Measures MM 3.5-11a and MM 3.5-9b follow CDFW's 2012 Staff Report on Burrowing Owl Mitigation. The staff report is the guiding document to reference impacts to, and mitigation for, burrowing owl. Mitigation Measure MM 3.5-9b requires compensation at a ratio of "15 acres per passively relocated burrowing owl pair, not to exceed the size of the final project footprint." As such, mitigation measures set forth in the Draft and Final EIS/EIRs are sufficient in mitigating impacts to burrowing owl according to CDFW.

11-H: Please see Master Response 1, above.

11-I: The commenter suggests the measures to protect relocated desert tortoises are insufficient including specific measures to handle relocated tortoises and hatchling tortoises.

Mitigation Measures MM 3.5-8a and MM 3.5-8b contain requirements for relocating desert tortoise in accordance with either the USFWS Biological Opinion for: Operations and Activities Edwards Air Force Base, California (8-8-14-F-14) or Desert Tortoise Council Guidelines with the accompaniment of a correlating incidental take permit issued by USFWS and CDFW. The protective measures regarding desert tortoise relocation shall be carried out in accordance with the Biological Opinion and incidental take permits. As such, mitigation measures set forth in the Draft and Final EIS/EIRs are sufficient in mitigating impacts to burrowing owl according to CDFW. As such, the mitigation measures set forth in the Draft and Final EIS/EIR are sufficient for reducing potential impacts to the desert tortoise.

11-J: The commenter suggests the Worker Environmental Awareness Training and Education Program is inadequate in mitigating impacts to desert tortoise habitat as it does not include specific measures or how long the workers will undergo training.

As indicated in Mitigation Measure MM 3.5-3a, prior to the issuance of grading or building permits and for the duration of construction activities, within 1 week of employment all new construction workers at the project site, laydown area and/or transmission routes shall attend a Worker Environmental Awareness Training and Education. Measures that the project will implement to protect desert tortoises, including construction personnel, are outlined in Mitigation Measures MM 3.5-8a, MM 3.5-12a, MM 3.5-4b, and MM 3.5-8b.

11-K: The commenter suggests that the mitigation measures are insufficient in instances where live tortoises are encountered. The commenter states the authorized biologist is given the authority to approve other monitors, which may be under-trained and/or underqualified to adequately protect and handle desert tortoises. Mitigation Measures MM 3.5-8a and MM 3.5-8b contain requirements for relocating desert tortoise in accordance with either the USFWS Biological Opinion for: Operations and Activities Edwards Air Force Base, California (8-8-14-F-14) or Desert Tortoise Council Guidelines with the accompaniment of a correlating incidental take permit issued by USFWS and CDFW. The protective measures regarding desert tortoise relocation shall be carried out in accordance with the Biological Opinion and incidental take permits. As such, the mitigation measures set forth in the Draft and Final EIS/EIRs are sufficient to reduce potential impacts to the desert tortoise.

11-L: The commenter states that the Draft EIS/EIR does not satisfactorily mitigate the impact on nesting birds such as the lesser nighthawk and Costa's hummingbird which may not migrate. Mitigation Measures MM 3.5-9a and MM 3.5-7b provide mitigation for nesting birds that are protected under the Migratory Bird Treaty Act (MBTA). This includes preconstruction surveys during the breeding season, and the protection of active bird nests through the implementation of a non-disturbance buffer around active nests. Thus, implementation of Mitigation Measures MM 3.5-9a and MM 3.5-7b would ensure appropriate avoidance of active nests. Although they may not migrate, both Costa's hummingbird and lesser nighthawk are protected in accordance with the MBTA (50 CFR 10.13).

11-M: The commenter states that the Draft EIS/EIR does not include a discussion of impacts to vegetation as they relate to Costa's hummingbird. Costa's hummingbird is a federal bird of conservation concern and is protected in accordance with the Migratory Bird Treaty Act and Fish and Game Code. As required in accordance with Mitigation Measure MM 3.5-7a/b, the project proponent shall implement a bird conservation strategy to avoid impacts to nesting birds, which includes Costa's hummingbird.

11-N: The commenter suggests that mitigation measures to protect nesting birds are not adequate as they need to be conducted more in advance. However, the commenter did not provide a rational for this statement. Mitigation Measure MM 3.5-9a requires an avian nesting survey no more than three days prior to initial vegetation clearing, which is a sufficient time period to ensure that a new nest would not be constructed immediately prior to vegetation clearing.

11-O: Commenter suggests pre-construction surveys are not sufficient to protect Costa's hummingbird and that long-term surveys are needed to assure the project is not impacting Costa's hummingbird habitat. Costa's hummingbird is not a state- or federally-listed species; therefore, protection or mitigation of occupied habitat is not required. In accordance with the MBTA and California Fish and Game Code, project activities may not

impact an active nest and shall not result in direct mortality of individuals. As required in accordance with Mitigation Measure MM 3.5-7a/b, the project proponent shall implement a bird conservation strategy to avoid impacts to nesting birds, which includes Costa's hummingbird. Mitigation Measure MM 3.5-9a requires an avian nesting survey no more than three days prior to initial vegetation clearing. Implementation of these mitigation measures will ensure that no active nests of Costa's hummingbird, or any other species protected in accordance with the MBTA, will be impacted during construction activities.

11-P: The commenter suggests that the Draft EIS/EIR does not discuss the impact to birds due to heat and glare from the solar panels and from unrelated loss of habitat from other sources such as developments, agriculture, and forestry practices. The commenter also suggests long-term bird surveys need to be conducted in the area. Mitigation Measure MM 3.5-7a includes the preparation and approval of a Bird Conservation Strategy by Kern County Planning and Natural Resources Department and Edwards AFB Natural Resources Manager to monitor the effects of the project on birds. As part of this measure, a post-construction survey for the first year following completion of the project will be conducted to monitor bird mortality associated with the project. The preparation and implementation of a Bird Conservation Strategy will be sufficient to document and analyze the impacts on birds.

11-Q: The commenter suggests the project poses a direct threat to special-status wildlife species including species listed under the Federal Endangered Species Act. The commenter also states that the project is not consistent with the Federal Endangered Species Act's goal of conservation and should be prevented from moving forward due to the presence of threatened and endangered species. The Federal Endangered Species Act (FESA) prohibits take of federally-listed species. However, incidental take of desert tortoise on Edwards AFB is covered under an existing incidental take permit from USFWS. As described under Mitigation Measure MM 3.5-8b, "Physical relocation of a desert tortoise may not occur unless approved by the wildlife agencies, and this may require authorizations pursuant to Incidental Take Permits from the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife." There are no other federally-listed species that have the potential to be affected by the project. Mitigation measures pertaining to the protection of desert tortoise include Mitigation Measures MM 3.5-3a, MM 3.5-8a, MM 3.5-12a, MM 3.5-2b, MM 3.5-4b, and MM 3.5-8b, which are sufficient to mitigate project-related impacts and are consistent with the conservation goals of FESA.

11-R: The commenter states that the Draft EIS/EIS must discuss the project's impact on vegetation and that impacts to vegetation is potentially catastrophic for the sensitive plants and animals that live in the desert ecosystem. Vegetation communities on the project site are discussed on pages 3.5-23 and 3.5-35. Impacts to these vegetation communities are discussed on pages 3.5-48 and 3.5-58. Mitigation Measures MM 3.5-4a and MM 3.5-12b include mitigation for potential impacts to vegetation communities. This includes revegetation/restoration to be conducted in accordance with Edwards Air Force Base Revegetation Plan and the preparation and implementation of a Vegetation Salvage Mitigation and Monitoring Plan if required by CDFW or LRWQCB. In addition, Mitigation Measures MM 3.5-13a, MM 3.5-14b and MM 3.5-15b include measures that minimize impacts to Joshua trees and Joshua tree woodland and Mitigation Measure MM 3.5-5a requires weed management for controlling the spread of noxious weeds in open space areas in the vicinity of the project.

11-S: The commentator states that the Draft EIS/EIR concludes that the project will have direct and indirect impacts to special-status plant species. The commenter also states that either

the no action/no project alternative or alternative that limits the project to existing development should be chosen to prevent damage to existing biological resources including sensitive plant species.

Mitigation Measures MM 3.5-4a, MM 3.5-2b and MM 3.5-4b are required to minimize impacts to special-status plants. This includes the preparation and implementation of a worker environmental awareness training and education program that provides training to all construction workers and contains the life history and legal protection afforded to special-status plant species. These measures also require pre-construction surveys, the preparation and implementation of surveying, monitoring and translocating protocols submitted and approved by the Edwards AFB Natural Resources Manager, delineation of work areas, avoidance of non-work areas and the prohibition of plant collection. These measures are sufficient to mitigate project-related impacts to special-status plant species.

11-T: The commenter states that the revegetation plans in place are not enough to ensure the protection of the identified plant species. The commenter proposes that the only solution to this potential impact would be to move the project to an area that is already developed, or to cease the project entirely.

Please see Response to Comment 11-S.

11-U: Please see Master Response 1, above.

11-V: Please see Master Response 1, above.

11-W: The commenter raised concerns about greenhouse gas (GHG) emissions and states that the Draft EIS/EIR needs to go farther in addressing the spike in greenhouse gas emissions during the construction, operation and decommissioning periods. However, the commenter does not state how the Draft EIS/EIR neglects to address spike in greenhouse gas emissions during the construction, operation and decommissioning periods. The Draft EIS/EIR evaluated GHG impacts from the project construction, operation and decommissioning in Section 3.8, *Greenhouse Gas Emissions*, and determined that the project would result in less than significant impacts as emissions are below the significance thresholds for NEPA (pages 3.8-34 – 3.8-39) and CEQA (page 3.8-.37). Since GHG impacts are less than significant, mitigation measures are not required except for the gen-tie portion of the project which will require implementation of Mitigation Measures MM 3.3-1b through MM 3.3-6b (pages 3.3-72 through 3.3-76). Furthermore, this project is reasonably expected to displace region-wide and statewide GHG emissions over the expected life of the project as it is essential to achieving the Renewable Portfolio Standards goals.

The commenter also states that due to the use of heavy construction equipment, unsafe levels of air pollutants would have an impact on the surrounding community and wildlife. A health risk assessment (HRA) was conducted for the project and determined that the maximally exposed individual residence (MEIR) would be located directly north of the project boundary along Trotter Avenue. As determined by the HRA, the potential unmitigated cancer risk, 6.5, and chronic HI, 0.004, at the MEIR resulting from construction activities would be below the EKAPCD thresholds of 10 in one million and one, respectively (pages 3.3-51 and 3.3-52). With mitigation, the cancer risk for construction decreases to 4.2 and the HI decreases to 0.003. As determined by the HRA, the potential cancer risk, 0.09, and chronic HI, 0.00002, at the MEIR resulting from operational activities would be below the EKAPCD thresholds of 10 in one million and one, respectively (page 3.3-52). Therefore, impacts associated with the project's potential

to expose sensitive receptors to substantial TAC emissions, due to project construction and operation, would be less than significant.

11-X: The commenter states that several mitigation measures have been deemed necessary for the project to avoid making a significant negative impact on the surrounding environment. Further, the commenter believes that the language addressing potential impacts downplays the risks in the implementation of the project and the commenter believes that the use of so much mitigation indicates how much damage the project potential may create. This comment has been noted for the record.

Every large scale energy project can entail risks to the environment and that is the reason the proposed action was analyzed in the EIS/EIR and that mitigation is used in addressing the impacts of the project in the EIS/EIR. Both Lead Agencies will be provided additional proposed mitigation in considering the proposed action, therefore additional public input is welcomed during the public review and comment period.

11-Y: The commenter states that the Draft EIS/EIR failed to address neighboring projects or the combined impact of the activities of the project. In compliance with Council on Environmental Quality (CEQ) regulations (40 CFR §§ 1508.7 and 1508.8) as well as the CEQA Guidelines, cumulative impact discussions were provided for each environmental topic area and provided at the end of each technical analysis contained within Chapter 3, under "Cumulative Impact Analysis". The analyses were based off of the cumulative project list provided in Table 3-1 of Chapter 3, Environmental Analysis, and includes related projects, both solar and non-solar projects, within Eastern Kern County and Los Angeles County that are either pending approval, approved, in construction or in operation at the time that the NOP was filed for the project (November 2017). A total of 85 cumulative projects within Eastern Kern Country as well as 30 cumulative project within Los Angeles County were considered as part of the cumulative analysis.

As part of the cumulative analysis contained within Chapter 3, the Draft EIS/EIR reasonably included information about cumulative projects where such information was relevant to the understanding of the environmental impacts. As summarized in Chapter 5, *Consequences of Project Implementation*, the project, in combination with cumulative projects, would have a less than significant impact related to all topics except for aesthetics and air quality, which were found to have a significant unavoidable cumulative impacts. As discussed therein, the project's contribution to the visible industrialization of the desert landscape would constitute a significant and unavoidable visual impact when considered in the context of existing cumulative conditions and reasonably foreseeable projects, both within the immediate project viewshed and in a somewhat broader context that encompasses the project and surroundings as a whole. In addition, construction of the proposed project with other cumulative projects would result in a net increase of criteria pollutants for which the project region is in nonattainment under applicable federal and state ambient air quality standards. This would result in a significant and unavoidable impact during construction.

The commenter specifically notes that air pollution, habitat fragmentation, GHG emissions, and noise are aggregate and have cumulative effects. The Draft EIS/EIR properly analyzed the cumulative impacts related to these topics. As discussed above, cumulative impacts related to air quality were found to be significant and unavoidable. With regard to habitat fragmentation, Chapter 3-5, Biological Resources, provides a comprehensive cumulative analysis and states that with implementation of Mitigation Measures MM 3.5-1a, MM 3.5-3a, MM 3.5-4a, and MM 3.5-13a for the solar facility portion of the project, and Mitigation Measures MM 3.5-1b, MM 3.5-2b, MM 3.5-13b,

MM 3.5-14b, and MM 3.5-15b for the gen-tie portion of the project, impacts would be reduced to a less than significant level and would thereby not create a significant contribution to the cumulative impacts of the region. As for GHG emissions, it was determined that while construction activities of the project would result in a short-term contribution to cumulative GHG emissions in California, operation of either of the action alternatives would result in a long-term offset of emissions from the electricity generation sector. As such, the project would not have a cumulatively considerable impact on global climate change, and the overall cumulative impact would therefore be beneficial. Finally, a cumulative impacts discussion related to noise was provided in Chapter 3.12, *Noise*. As discussed therein, due to the localized nature of noise impacts, the project would not contribute to significant cumulative noise impacts. While construction activities associated with other projects in proximity to the project site could occur at the same time as the Proposed Action, these related projects would also be subject to Kern County noise standards and established thresholds pertaining to increased noise at the locations of sensitive receptors. As such, when considered with other past, present, and reasonably foreseeable future projects, the project would not result in a cumulatively considerable contribution to adverse noise effects in the vicinity of the project site.

11-Z: Please see Master Response 1, above.

Comment Letter T1 Public Hearing 1, June 26th, 2019

Mrs. Betty Cordova:

T1-A: "We have two and a half acres on Backus Road and Sierra Highway, 230 feet on Sierra Highway and Backus Road, and 600 feet north on Sierra Highway, all backing Edwards Air Force Base solar -- solar area.

We would like to know what kind of financial or adverse health issues this project will impact on our property and those around us….

T1-B: ….And also, will option A, B, and C -- will that be overhead or underground transmission?"

T1-C: Support for the project was vocalized by the following persons:

- Mike Martin
- Tydrick Carr
- John Cangey
- Andrew Bernardez
- Angela Griffin
- Justin Van Hosen
- Manuel Ramirez
- Frederick Viszneki
- Jeremy Maldonado
- Miguel Ramirez
- Louie Lopez
- Christopher Garcia
- Cedric Alexander

Response to Comment Letter T1 – Public Hearing No. 1, June 26th, 2019

T1-A: The commenter requests information in regards to the potential financial or adverse health impacts caused as a result of project implementation. The financial impact of the project on nearby land uses is beyond the scope of the environmental analysis conducted for the EIS/EIR. Furthermore, a health risk assessment (HRA) was conducted for the project. The outcome of the HRA is that the maximally exposed individual residence (MEIR) would be located directly north of the project boundary along Trotter Avenue. As determined by the HRA, the potential unmitigated cancer risk, 6.5, and chronic HI, 0.004, at the MEIR resulting from construction activities would be below the EKAPCD thresholds of 10 in one million and one, respectively (pages 3.3-51 and 3.3-52). With mitigation, the cancer risk for construction decreases to 4.2 and the HI decreases to 0.003. As determined by the HRA, the potential cancer risk, 0.09, and chronic HI, 0.00002, at the MEIR resulting from operational activities would be below the EKAPCD thresholds of 10 in one million and one, respectively (page 3.3-52). Therefore, impacts associated with the project's potential to expose sensitive receptors to substantial TAC emissions, due to project construction and operation, would be less than significant. Therefore, as concluded in the Draft EIS/EIR, the project, including project construction and operational air pollutant emissions, would have no impact on nearby residents, wildlife habitat, ecosystems or other biological resources.

T1-B: The commenter also asks if generation tie-line option A, B, and C will be overhead or underground transmission. The selected gen-tie line route would be constructed aboveground on one set of steel monopoles for the majority of the route, with some H-frame structures as needed. Pole height would likely range between 100 and 180 feet, and would not exceed 215 feet.

T1-C: The commenters vocalized their support of the project and would like to encourage all decision makers to approve the proposed project. The commenters believe the project would be good for local jobs and "Green" electricity. These comments are noted for the record.

Comment Letter T2 Public Hearing 2, June 27th, 2019

T2-A: Support for the project was vocalized by the following persons:

- Jim Elrod
- Brian Holt
- Nick Horrall
- Hector Delgado
- Taluai Limaila
- Gordon Schafnitz
- Alexis De Santiago
- Taylor Creighton
- Courtney Garcia
- Bernard Taylor
- Lance Benitez
- John Cangey
- Mike Loundagin
- David Sanchez
- Steve Horrall
- Mike Martin
- Lovell Fleming

Response to Comment Letter T2 – Public Hearing No. 2, June 27th, 2019

T2-A: The commenters vocalized their support of the project and would like to encourage all decision makers to approve the proposed project. The commenters believe the project would be good for local jobs and "Green" electricity. These comments are noted for the record.

CHAPTER 8
Abbreviations and Acronyms

1/4	one-quarter
AB	Assembly Bill
AB32	Assembly Bill 32
AC	alternating current
ACHP	Advisory Council on Historic Preservation
ACOE	Army Corps of Engineers
AD	Anno Domini
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFTC	Air Force Flight Test Center
AFI	Air Force Instruction
AFIs	Air Force Instructions
AFTC	Air Force Test Center
AFY	acre-feet per year
AICUZ	Air Installation Compatible Use Zones
ALUCP	Airport Land Use Compatibility Plan
APCD	Air Pollution Control District
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee's
AQAP	Air Quality Attainment Plan
ARB	Air Resources Board
ARPA	Archeological Resources Protection Act
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
AVAQMD	Antelope Valley Air Quality Management District
AVEK	Antelope Valley-East Kern
BBCS	Bird and Bat Conservation Strategy

BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMPs	best management practices
BO	Biological Opinion
BP	before present
CAA	Clean Air Act
CaCO3	calcium carbonate
CAFE	corporate average fuel economy
CARB	California Air Resources Board
CBC	California Building Code
CCAA	Clean Air Act of 1988
CCD	Census County Division
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CDPs	considered Census Designated Places
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH4	methane
CHL	California Historical Landmarks
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CL	Cluster
CNDDB	Fish and Game Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO2	carbon dioxide
COG	Council of Governments

CPUC	California Public Utility Code
CRHR	California Register of Historical Resources
CSLC	California State Lands Commission
CT	Census Tract
CVC	California Vehicle Code
CWA	Clean Water Act
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
DOGGR	Division of Oil, Gas, and Geothermal Resources
DPM	diesel particulate matter
DRECP	Desert Renewable Energy Conservation Plan
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
ECCMP	Environmental and Construction Compliance Monitoring Plan
EIAP	Environmental Impact Analysis Process
EKAPCD	Eastern Kern Air Pollution Control District
EO	Executive Order
EPS	Emissions Performance Standard
ESA	Endangered Species Act
EUL	Enhanced Use Lease
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FAT	Yosemite International Airport
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FFRMS	Federal Flood Risk Management Standard
FHWA	Federal Highway Administration's
FIRM	Flood Insurance Rate Maps
FONSI	Finding of No Significant Impact
FR	Federal Register
FTA	Federal Transit Administration's
GDP	Gross Domestic Product
GHG	greenhouse gas
GIS	geographic information system

GWP	Global Warming Potential
H2O	water
HAPs	total hazardous air pollutants
HFC	hydrofluorocarbons
HMBP	Hazardous Materials Business Plan
HMMP	Hazardous Materials Management Plan
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPCC	Intergovernmental Panel on Climate Change
IS/NOP	Initial Study/Notice of Preparation
ISDD	Intermediate Storm Design Discharge
KCGP	Kern County General Plan
KCPD	Kern County Planning Department
KOP	Key Observation Point
KOPs	potential Key Observation Points
LACM	Museum of Los Angeles County
LADWP	Los Angeles Department of Water and Power
LOS	Level of Service
MARSA	Military Assumes Responsibility for Separation of Aircraft
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MDAB	Mojave Desert Air Basin
MMRCP	Monitoring, Reporting, and Compliance Program
MOUs	Memoranda of Understanding
MRZs	Mineral Resource Zones
MSAs	Metropolitan Statistical Areas
MSP	Mojave Specific Plan
MT	metric tons
MW	megawatts
N2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission

NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NCCP	Natural Communities Conservation Plan
NDAA	National Defense Authorization Act
NEHRP	National Earthquake Hazards Reduction Program
NEPA	National Environmental Policy Act
NF3	nitrogen trifluoride
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NO	nitric oxide
NO2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOP	Notice of Preparation
NOP/IS	Notice of Preparation and Initial Study
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
O3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
OSD	Office of the Secretary of Defense
OWTS	offsite wastewater treatment systems
EIS/EIR	Program Environmental Impact Statement / Program Environmental Impact Report
PERP	Portable Equipment Registration Program
PFC	perfluorocarbons
PM10	Respirable Particulate Matter
PM2.5	Fine Particulate Matter
PNNL	Pacific Northwest National Lab
POUs	publicly owned utilities
PPV	peak particle velocity
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
PV	solar photovoltaic

R-2	Medium-density Residential
RCSD	Rosamond Community Services District
RE	Recurrent Energy
RFQ	Request for Qualifications
RHNA	Regional Housing Needs Allocation
RMS	root mean square
ROD	Record of Decision
ROGs	reactive organic gases
ROWD	report of water discharge
ROWs	Rights-of-Way
RPS	Renewable Portfolio Standard
RS	Residential Suburban
RTP	Regional Transportation Plan
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAB	South Coast Air Basin
SCE	Southern California Edison
SCS	Sustainable Communities Strategy
SF6	sulfur hexafluoride
SGHAT	Solar Glare Hazard Analysis Tool
SHPO	State Historic Preservation Officer
SIPs	State Implementation Plans
SJVAB	San Joaquin Valley Air Basin
SO2	sulfur dioxide
SPCC	Prevention, Control, and Countermeasure
SR	State Route
SRAs	State Responsibility Areas
SSC	Species of Special Concern
SSJVIC	San Joaquin Valley Archaeological Information Center
SUA	Special Use Airspace
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants

TCR	Climate Registry
TEM	Transportation Energy Manager
TRACON	Terminal Radar Approach Control
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USMC	United States Marine Corps
VOCs	volatile organic compounds
VRM	Visual Resource Management
WE	Wind Energy
WEMO	West Mojave Plan
WERS	West Edwards Road Settlement
WSSP	Willow Springs Specific Plan

CHAPTER 9
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Edwards Air Force Base Civil Engineer Group

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Air Force Civil Engineer Center

Air Force Judge Advocate, Contracting and Environmental

Air Force Installation and Mission Support Center Det 6

Kern County

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CHAPTER 10
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