Scarlet Solar Energy Project

Draft Environmental Impact Report No. 7230

SCH#2018091022

prepared by

County of Fresno
Department of Public Works and Planning
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Fresno, California 96721
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prepared with the assistance of

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May 2021

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Executive Summary

Introduction

The Scarlet Solar Energy Project (Project) is proposed by RE Scarlet LLC (Applicant), a wholly owned subsidiary of EDP Renewables North America LLC (EDPR NA). The Applicant has applied to the Fresno County Department of Public Works and Planning (the County) for an Unclassified Conditional Use Permit (CUP)[1] to construct, operate, maintain, and decommission a solar photovoltaic (PV) electricity generating facility (referred to in this document as the Solar Facility) and energy storage system and associated infrastructure to be known as the Scarlet Solar Energy Project. The Solar Facility would generate a total of up to 400 megawatts (MW) of alternating current (AC)[2] at the point of electrical grid interconnection on approximately 4,089 acres in unincorporated western Fresno County. The Project would provide solar power to utility customers by interconnecting to the regional electricity grid at Pacific Gas and Electric Company's (PG&E) Tranquillity Switching Station located approximately 0.75 mile west of the Project site.

This Draft Environmental Impact Report (EIR) has been prepared by Fresno County as the lead agency under CEQA. It provides information about the environmental setting, documents the County's analysis of the environmental impacts of the Project and alternatives, discloses areas of controversy and issues to be resolved, and provides information to meet the needs of other agencies that may be required for their consideration of the Project.

Project Summary

Project Site

The Project site is located in unincorporated Fresno County, approximately 3.5 miles west-southwest of the community of Tranquillity and approximately 6.5 miles east of Interstate 5 (I-5). The Project site is north of and adjacent to the Great Valley Solar Generating Facility (previously called the Tranquillity Solar Facility). The Project site would encompass up to 33 parcels[3] generally located south of West South Avenue, north of West Dinuba Avenue, east of South Ohio Avenue and State Route (SR) 33 (South Derrick Avenue), and west of South San Mateo Avenue.

[1] The Unclassified CUP process allows the City to consider, in its discretion, uses that would be essential or desirable, but that are not allowed as a matter of right within a zoning district. PV solar power generation facilities may be permitted in any zoning district with the issuance of an Unclassified CUP.

[2] PV panel capacity generally is measured in direct current (DC) watts; however, because the DC output from panels must be converted to AC before being distributed on the electric grid, this EIR reports expected capacity in terms of AC watts. Although preliminary estimates indicate that 400 MW AC would be the expected nominal generating capacity of the Project, the actual generating capacity would depend on the efficiency of the PV panels available at the time of construction and the layout and tracking technology approved.

[3] The project would be constructed on any or all of parcels with the following assessor parcel numbers (APN) 028-07-134, 028-07-139, 028-07-140, 028-07-141, 028-07-143, 028-07-144, 028-07-145, 028-07-147, 028-07-148, 028-07-149, 028-08-166, 028-11-101, 028-11-102, 028-11-104, 028-11-106, 028-11-107, 028-11-109, 028-11-110, 028-11-112, 028-11-113, 028-11-114, 028-11-115, 028-11-116, 028-11-117, 028-11-119, 028-11-120, 028-12-061, 028-12-062, 028-10-074, 028-10-072, 028-10-082, 028-10-081, and 028-101-75S.

The Project site is designated as Agriculture in the Fresno County General Plan (2000) and is zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) (Fresno County 2011). All of the parcels are currently owned by Westlands Water District.[4]

The existing land use of the Project site is primarily dry-farmed agriculture. For the past 10 years, the Project site intermittently has been in low-yield agricultural production (tilled, seeded, and harvested for winter wheat); intermittently irrigated (drip or sprinkler) and harvested for alfalfa seed or other crops; or disked twice a year and left fallow. All of the parcels in the Project footprint are part of Westlands Water District settlements that require a non-irrigation covenant upon transfer of ownership.

Existing land uses surrounding the Project site consist of agriculture, solar development, and two rural residences. Non-irrigated agricultural land surrounds the Project site to the north, east, and west. These lands are owned mostly by Westlands Water District, which keeps them in various states of low-value agricultural production. The Great Valley Solar Generating Facility and two rural residences border the Project site to the south. The Adams East Solar Facility is located approximately 0.4-mile northwest of the Project site.

Project Components

The Project, as defined for the purposes of CEQA analysis, would be comprised of two major components: the Solar Facility and the PG&E Improvements. The Solar Facility includes solar PV modules (or modules), support structures, electrical inverters, and intermediate voltage transformers. The Solar facility would include two substations which would receive consolidated intermediate voltage cables from the collector system and step the voltage up to 230 kV via high voltage transformers located in the individual PV substation or shared facilities. Each substation area would include an electrical control building. Other necessary infrastructure would include one permanent operation and maintenance building, a supervisory control and data acquisition (SCADA) system, up to 400 MW of on-site battery storage, meteorological data system, access roads, and security fencing. The proposed substations would tie into PG&E's high-voltage 230 kV Tranquillity Switching Station, via a new transmission line. The Tranquillity Switching Station connects to PG&E's two existing 230 kV transmission lines located directly adjacent to the Switching Station. The components of the proposed Project are discussed further in Section 2, *Project Description*.

If approved, construction of the proposed Project would occur in phases which would include: (1) site preparation, (2) installation of the PV system, and (3) installation of the inverters, transformers, substation(s), switching station, and the gen-tie line. Upon commissioning, the Project would enter the operational phase. The solar modules at the site would operate during daylight 7 days per week, 365 days per year. Operational activities at the Project site would include: solar module washing; vegetation, weed, and pest management; security; responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics; and communicating with customers, transmission system operators, and other entities involved in facility operations. The Project is anticipated to have an operating life of up to 35 years. After this period, the facility would be decommissioned and site reclamation would occur.

[4] The Westlands Water District acquired these properties as part of the following settlements: (1) the September 3, 2002 settlement agreement reached among the United States, Westlands Water District, and others in the Sumner Peck Ranch et al. v. Bureau of Reclamation et al. lawsuit; (2) the Britz settlement (a separate action executed on September 3, 2002); and (3) the 2002 settlement agreement reached in the Sagouspe et al. v. Westlands Water District et al. lawsuit.

Purpose and Use of the Draft EIR

This Draft EIR is an informational document intended to disclose to the public and decision-makers the potential environmental impacts of the Project. This document assesses the direct, indirect, and cumulative environmental impacts that could occur as a result of the Project. The analysis in this document is based upon information submitted to the lead agency, Fresno County, as part of the Applicant's CUP applications to the County Department of Public Works and Planning, as well as from Project-specific and site-specific technical studies and research conducted by the EIR preparers.

This Draft EIR examines the potential impacts of the Project and alternatives to the Project. All of the resource areas in the CEQA Guidelines Appendix G Checklist were studied: Aesthetics, Agriculture and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation/Traffic, Tribal Cultural Resources, Utilities and Service Systems, and Wildfire.

The County will rely on this EIR, along with other information in the formal record, in deciding whether to approve, approve with modifications, or disapprove the CUP application. Other agencies with trustee responsibilities or permitting authority over the Project also may rely on this document in deciding whether to approve permits or issue other approvals for the Project.

Project Objectives

The Applicant has identified the following objectives for the Project:

- Establish a solar PV power generating facility of a sufficient size and configuration to produce up to 400 MW_{ac} of electricity at the Point of Interconnection in a cost-competitive manner;
- Develop a site which is proximate to existing transmission infrastructure in order to minimize environmental impacts;
- Assist California utilities in meeting their obligations under California's Renewable Portfolio Standard (RPS) Program to achieve 60 percent eligible renewable energy resources by the end of 2030 and zero-carbon sources by the end of 2045 in addition to meeting the 2030 greenhouse gas emissions reduction goals as required by the California Global Warming Solutions Act (Senate Bill [SB] 32);
- Assist California utilities in meeting their obligations under the California Public Utilities Commission's Energy Storage Framework and Design Program by providing up to 400 MW of storage capacity;
- Facilitate grid integration of intermittent and variable PV energy generation and minimize energy losses associated with transmission to off-site storage by collocating battery storage at the Project site.

Environmental Impacts

Sections 4.1 through 4.15 in Section 4, *Environmental Impact Analysis,* provide a detailed discussion of the setting; direct, indirect, and cumulative impacts of the Project; and mitigation measures designed to reduce potential significant impacts below established thresholds. Potential impacts to the resource areas identified in CEQA Guidelines Appendix G have been evaluated.

Analysis of a project's potential to result in a significant impact to wildfire is only required if a project is "located in or near state responsibility areas or lands classified as very high fire hazard severity zones" (Appendix G of the State CEQA Guidelines). Because the Project site is not located in or near "very high fire hazard severity zones," a detailed analysis of the Appendix G significance thresholds for Wildfire is not necessary. Refer to Section 4, *Environmental Impact Analysis*, for additional information.

Issues Addressed in Initial Study with No Impact

The Initial Study in Appendix A determined the Project would have no impact to any of the following resource considerations:

- Forestry Resources
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Tribal Cultural Resources

Less Than Significant Impacts

The Project would have a less than significant impact, or a less than significant impact with the implementation of mitigation measures, regarding the following resource considerations:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Transportation
- Utilities and Service Systems

Significant and Unavoidable Impacts

Section 15126.2(b) of the CEQA Guidelines requires that the EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. The Project would have no significant and unavoidable impacts.

Irreversible Impacts

Section 15126.2(c) of the CEQA Guidelines defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continuing phases of the Project. Irreversible impacts also can result from damage caused by environmental accidents associated with a project. Irretrievable commitments of resources are evaluated to ensure that such consumption is justified.

Buildout of the Project would commit nonrenewable resources during project construction and ongoing utility services during Project operations. During operations, some oil, gas, and other fossil fuels and nonrenewable resources would be consumed and irreversible commitments of small quantities of nonrenewable resources would occur as a result of long-term Project operations. However, once operational the Project would result in a substantial net benefit with respect to nonrenewable resources as a result of the amount of renewable energy that would be generated.

Alternatives to the Project

CEQA requires a lead agency to analyze a reasonable range of alternatives to the Project that could feasibly attain the basic objectives of the project while substantially reducing or eliminating significant environmental effects. CEQA also requires an EIR to evaluate a "no project" alternative to allow decision-makers to compare impacts of approving a project with the impacts of not approving it. The alternatives development process, alternatives eliminated from further consideration, and alternatives considered in the EIR are described in greater detail in Section 6, *Alternatives*.

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[f][2]). The following potential alternatives were eliminated from further consideration in the EIR because they failed to meet most of the Project objectives, were infeasible, or did not avoid or substantially reduce any significant environmental effects:

- **Alternative Locations:** Alternative locations considered included i) other potential candidate sites; ii) degraded agricultural land; and iii) impaired or underutilized lands.
- **Alternative Solar Technology:** The alternative technology considered was concentrated solar.
- **Alternative Approaches:** Alternative approaches included conservation and demand side management.

A discussion of the rationale for not carrying forward these alternatives for more detailed environmental review is provided in Section 6.1, *Alternatives Considered but Rejected*.

Alternatives Considered in the EIR

A range of reasonable alternatives were analyzed in this Draft EIR. The Project would have no significant and unavoidable impacts. Two alternatives to the Project were considered and are summarized below. The No Project Alternative is required by CEQA and described in Section 6.2.1. The Reduced Acreage Alternative is described in Section 6.2.2.

Alternative 1: No Project Alternative

This analysis discusses the existing conditions at the time the Notice of Preparation (NOP) was published, as well as what reasonably would be 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.

The Project site is designated "Agriculture" as shown on Fresno County General Plan Countywide Land Use Diagram Figure LU-1a (Fresno County 2000) and is zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size). If the Project were not approved, then other uses consistent with the AE-20 zoning designation could be made on one or more of the parcels that comprise the Project site (Fresno County 2011). Pursuant to Fresno County Ordinance Code Section 816, uses (among others) that are allowed by right without a permit relate to livestock, poultry, and crops; home occupations; agricultural products; apiaries; kennels; and welding and blacksmith shops. No such competing proposals for site use are before the County. Accordingly, rather than speculate as to possible other uses, the analysis of the No Project Alternative in this Draft EIR assumes a no-development/no Project scenario where the existing agricultural use is continued as it exists under pre-Project conditions.

The No Project Alternative assumes that the proposed PV electricity generating facility, energy storage system, and associated infrastructure of the Project are not constructed. Under a no-development scenario, the property would continue in agricultural use and the existing environmental setting would be maintained. In this scenario, there would be no changes to that setting, including changes to the landscape (visual resources, habitat, and land use/agriculture); Project-related construction noise, traffic, and air emissions would not occur; and environmental benefits relating to renewable energy would not be realized from solar development of the site.

As a no-development alternative, the No Project Alternative would avoid all Project-related impacts. It would cause no new impacts on the physical environment; i.e., existing land uses would continue to affect environmental conditions as they are now. No legal, regulatory, or technical feasibility issues were identified that would eliminate the No Project Alternative from consideration. However, the No Project Alternative would not fulfill any Project objectives because the existing conditions would not assist California utilities in meeting renewable energy sources, assist in greenhouse gas emissions reductions, and would not establish a solar PV facility on the Project site.

Alternative 2: Reduced Acreage

Under Alternative 2, approximately 320 acres in the southeastern portion of the Project site would not be developed (see Figure 6-1, *Reduced Acreage Alternative*). This represents an approximately 8 percent reduction in the size of the Solar Facility. No solar panels would be constructed in that area, and perimeter chain link fencing would not enclose that that section. Land within this area would continue to be used as farmland, and occasionally dry-farmed, disced, or intermittently irrigated. Existing foraging, denning, and other habitat value would be maintained on the approximately 320 acres. The Project otherwise would be as described in Section 2, *Project Description*. Notably, this

alternative would generate the same amount of renewable energy (400 MWac) and energy storage capacity (400 MW) as the proposed Project, by reducing the area of open spaces and other areas on the site that would otherwise be used for storage, parking, or other purposes, and increasing the density/concentration of solar modules across the site.

Compared to the Project, Reduced Acreage Alternative would entail less surface disturbance, less construction dust, reduced construction and decommissioning emissions, and reduced demand for water.

Comparison of Alternatives

Table ES-1 summarizes impacts of the alternatives compared to the Project.

Table ES-1 Comparison of Impacts of Alternatives to Proposed Project

Issue	Project Impact Classification	Alternative 1: No Project	Alternative 2: Reduced Acreage
Aesthetics	Less than Significant	+	=
Agricultural Resources	Less than Significant with Mitigation Incorporated	+	=
Air Quality	Less than Significant with Mitigation Incorporated	+	=
Biological Resources	Less than Significant with Mitigation Incorporated	+	=
Cultural Resources	Less than Significant with Mitigation Incorporated	+	=
Energy	Less than Significant and Beneficial	-	=
Geology and Soils	Less than Significant with Mitigation Incorporated	+	=
Greenhouse Gas Emissions	Less than Significant and Beneficial	-	=
Hazards and Hazardous Materials	Less than Significant with Mitigation Incorporated	+	=
Hydrology and Water Quality	Less than Significant with Mitigation Incorporated	+	=
Land Use and Planning	No Impact	=	=
Noise	Less than Significant	+	=
Transportation	Less than Significant	+	=
Utilities and Service Systems	Less than Significant with Mitigation Incorporated	+	=

+ Superior to the proposed Project (reduced level of impact)

- Inferior to the proposed Project (increased level of impact)

= Similar level of impact to the proposed Project

Environmentally Superior Alternative

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. CEQA Guidelines Section 15126.6(a) places emphasis on alternatives that "avoid or substantially lessen the significant effects" of a project; distinctions between impacts that are less than significant or are mitigated to less than significant are typically not considered when selecting an environmentally superior alternative. No significant and unavoidable effects were identified for the Project.

The No Project Alternative would avoid all impacts of the Project and would not create any new significant impacts of its own. However, the No Project Alternative would not result in the Greenhouse gas (GHG) emissions reductions and energy benefits that would result from the Project. The No Project Alternative also would fail to meet any of the basic Project Objectives, including assisting California utilities in meeting their obligations under California's RPS Program.

The No Project Alternative is considered the environmentally superior alternative for CEQA purposes because it would not create any of the localized impacts of the Project, even though it would have a less beneficial impact than that of the Project on energy and GHG emissions. However, the No Project Alternative would fail to meet the basic objectives of the Project, including, but not limited to, the generation of renewable solar electricity from proven technology and construction of a project that would assist the State in achieving RPS and SB 32 GHG reduction goals.

Since the environmentally superior alternative is the No Project Alternative, the EIR also must identify an environmentally superior alternative from among the other alternatives. There are no significant and unavoidable impacts that cannot be reduced to a less-than-significant level under the Project or Reduced Acreage Alternative. The Reduced Acreage Alternative would incrementally reduce impacts in most issue areas from the 320 fewer acres of disturbance, but the impact conclusions would be the same as the Project.

The County preliminarily has identified the Project as the environmentally superior alternative because no alternative was identified that reduces any significant impacts and the Project by definition meets the Project objectives. Nonetheless, County decision-makers may weigh the relative benefits of the alternatives differently and with additional information received in or developed during the project approval process reasonably could reach a different decision.

Areas of Controversy

Areas of controversy were identified through written agency and public comments received during the scoping period; all comments received during the scoping period are provided in Appendix A, and summarized in Section 1, *Introduction*. Issues identified as potential areas of controversy prior to the publication of this Draft EIR relate to Aesthetics, Agricultural Resources, Air Quality, Greenhouse Gas Emissions, Biological Resources, and Transportation/Traffic.

Issues to be Resolved

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain issues to be resolved, which include the choice among alternatives and whether or how to mitigate significant impacts. The following major issues are to be resolved:

- Determine whether the EIR adequately describes the environmental impacts of the Project
- Determine whether or not the recommended mitigation measures should be adopted or modified
- Determine whether or not additional mitigation measures need to be applied to the Project

Summary of Impacts and Mitigation

Table ES-2 summarizes the environmental impacts of the Project, including the Solar Facility and the PG&E Improvements, and recommended mitigation measures, that, if adopted, would avoid or substantially reduce potential significant impacts of the Project. The analysis of each impact is provided on a resource-by-resource basis in Section 4, *Environmental Impact Analysis.*

Table ES-2 Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact AES-1. The Project would not substantially degrade the existing visual character and quality of public views of the site and its surroundings.	Less than Significant	No mitigation is required.	Less than Significant
Impact AES-2. The Project could create a new source of light and glare. However, the Solar Facility would not adversely affect day or nighttime views in the Project area.	Less than Significant	No mitigation is required.	Less than Significant
Impact AG-1. A portion of the Project site contains Farmland of Statewide Importance.	Less than Significant	No mitigation is required.	Less than Significant
Impact AG-2. The Project is an allowable use on the Project site and would not conflict with existing zoning for agricultural use or a Williamson Act contract.	Less than Significant	No mitigation is required.	Less than Significant
Impact AG-3. The Project would not involve other changes in the existing environment, which due to their location or nature, could result in conversion of Farmland, to non-agricultural use.	Less than Significant	No mitigation is required.	Less than Significant
Impact AQ-1. The Project would exceed SJVAPCD thresholds for emissions of some criteria air pollutants during construction, operation and maintenance, and decommissioning, and would therefore conflict with SJVAPCD's air quality management plans.	Significant	The following mitigation measures are applicable to the Solar Facility and the PG&E Improvements: **AQ-1 Air Quality Best Management Practices.** During construction and decommissioning of the Project, the following measures shall be implemented: ▪ Ozone precursor emissions from mobile construction equipment shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturers' specifications. Equipment maintenance records and equipment design specification data sheets shall be kept onsite during construction.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		▪ Electricity from power poles shall be used whenever practicable instead of temporary diesel- or gasoline-powered generators to reduce the associated emissions. ▪ Construction equipment will use only California-certified diesel or gasoline fuels ▪ The Applicant will use construction equipment that is at the Tier 4 interim emission level for equipment less than or equal to 81 horsepower and Tier 3 engines for all other equipment. **AQ-2 Further Reduction of NO_X, PM_{10}, and $PM_{2.5}$ Emissions During Construction and Decommissioning, and PM10 Emissions During Operation and Maintenance.** Prior to issuance of construction/grading permits for the Project, the Project Applicant shall provide evidence to the County that Project construction and decommissioning emissions of NOx, PM_{10}, and $PM_{2.5}$, and Project operation and maintenance emissions of PM_{10} would not exceed the SJVAPCD significance thresholds. If the Project Applicant is unable to guarantee that Project construction and decommissioning emissions of NOx, PM_{10}, and $PM_{2.5}$, and Project operation and maintenance emissions of PM_{10} would not exceed the SJVAPCD significance thresholds, the Project Applicant shall enter into a VERA with the SJVAPCD to mitigate or reduce Project emissions beyond the requirements of Rule 9510 through the payment of fees (on a per-ton basis) to the SJVAPCD. The payment of fees shall be made to the SJVAPCD based on the fee schedule in the development mitigation contract and the amount of reduction necessary to offset project emissions below the SJVAPCD's thresholds. Prior to the issuance of construction/grading permits for the Project, the Project Applicant shall provide evidence to the County of a fully-executed VERA, should one be required.	
Impact AQ-2. The Project would not expose sensitive receptors to substantial pollutant concentrations during construction, operation and maintenance, or decommissioning.	Less than Significant	No mitigation is required.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact BIO-1. Implementation of the Project has potential to have a direct or indirect adverse effect on special status species.	Significant	Mitigation Measures BIO-1(a) through Mitigation Measures BIO-1(s) are applicable to both the Solar Facility and the PG&E Improvements. Mitigation Measures BIO-1(t) and BIO-1(u) are also applicable to the Solar Facility. **BIO-1(a) Worker Environmental Awareness Program.** Prior to initiation of construction activities (including staging and mobilization), operation and maintenance activities, and decommissioning, all personnel associated with Project construction shall attend Worker Environmental Awareness Program training, conducted by a qualified biologist, to aid workers in recognizing special-status resources that may occur in the Project area. The specifics of this program shall include identification of the sensitive species and habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information shall be prepared for distribution to all contractors, their employers, and other personnel involved with construction of the Project. All employees shall sign a form provided by the trainer documenting they have attended the training and understand the information presented to them. **BIO-1(b) Pre-Construction Nesting Bird Surveys and Impact Avoidance**: If Project activities are scheduled to take place between September 16 through January 31, which is outside of the avian nesting season, no action would be required to protect nesting birds. If Project activities have been continuous since prior to February 1, no action would be required to protect nesting birds. If any Project activities that could harm birds or their nests (e.g., clearing temporary workspaces; staging or stockpiling machinery or supplies; parking vehicles, equipment, or trailers; grading or leveling; creating stockpiles of dirt or gravel; or any activity that could cover or remove existing habitat or disrupt surface soils) commence during the typical avian nesting season (February 1 through September 15), the following measures shall be implemented to avoid impacts on nesting raptors and other protected and common birds. ▪ No more than 14 days prior to initiation of such activities, a qualified biologist shall conduct a pre-construction survey to determine if birds or nests are present. The survey area shall include suitable nesting habitat within 300 feet of the Project boundary (inaccessible areas outside of the Project site can be surveyed from the site or from public roads using binoculars or spotting scopes). Surveys may be phased as construction is phased, so that each section is surveyed no more than 14 days prior to the start of construction in that area. If no active nests are identified, no further mitigation is required.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		▪ If active nests are identified, a qualified biologist shall establish a no-disturbance buffer around the nests and no construction within the buffer shall be allowed until a qualified biologist determines that the nest is no longer active (*i.e.,* the nestlings have fledged and are no longer reliant on the nest, or the nest has failed). The avoidance buffer size shall be determined based on species that is nesting, the status of the nest, site conditions, and level of anticipated Project activity in the vicinity of the nest. Encroachment into the buffer may occur at the discretion of a qualified biologist. Any encroachment into the buffer shall be monitored by a qualified biologist to determine whether nesting birds exhibit any negative responses to the activity. The biologist shall have the authority to halt or redirect construction activities in order to protect nesting birds and to help ensure an impact to nesting birds is avoided. **BIO-1(c) Cap Hollow Tubes and Poles:** Any vertical tubes (e.g., solar mount poles, chain link fencing poles, or any other hollow tubes or poles) used on the Project site shall be capped immediately after installation to avoid entrapment of birds. **BIO-1(d) Avoid Construction and Decommissioning Activities During the Burrowing Owl Nesting Season.** Ground-disturbance activities associated with construction and decommissioning of the Project shall begin outside of the burrowing owl nesting season (February 1 through September 15), unless reasonably necessary to stay on schedule. The site shall be maintained in a manner inhospitable to burrowing owl, such as keeping the site free of vegetation and maintaining regular site disturbance by construction equipment and personnel. **BIO-1(e) Burrowing Owl Take Avoidance Survey.** No more than 14 days prior to initiation of ground-disturbing activities associated with construction and decommissioning, a qualified biologist shall conduct a take avoidance survey of the Project site and surrounding areas to a distance of 150 meters, in accordance with the methods outlined in the CDFG Staff Report on Burrowing Owl Mitigation (CDFG 2012). The pre-construction survey will cover all areas within 150 meters of the portion of the site in which construction/decommissioning is scheduled to start. Surveys will be phased, based on the construction/ decommissioning schedule, such that they are conducted no more than 14 days before the start of ground disturbance in new areas. If construction/decommissioning activities in portions of the site cease for a period of 14 days, those portions of the site will be resurveyed for burrowing owls prior to the resumption of construction. If no	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		occupied (breeding or wintering) burrowing owl burrows are identified, no further mitigation will be required. **BIO-1(f) Burrowing Owl Burrow Avoidance or Passive Relocation** If occupied burrows are identified on the site or within 150 meters of the Project disturbance area, one of the following actions shall be taken: 1) permanent avoidance of the burrow or 2) establishment of a temporary avoidance buffer followed by passive relocation and compensatory mitigation for loss of habitat in conjunction with the measures below: 1. Site-specific, no-disturbance buffer zones shall be established and maintained between Project activities and occupied burrows, using the distances recommended in the CDFW guidelines (CDFG 2012) or as otherwise determined appropriate by the qualified biologist in consultation with CDFW: 2. Avoidance of active burrows is preferrable, however, if an occupied burrow cannot be avoided, and the burrow is not actively in use as a nest, the burrowing owls can be excluded from burrows in accordance with an approved Burrowing Owl Exclusion Plan, which shall be prepared and submitted for approval by CDFW prior to passive relocation of any burrowing owls. The Burrowing Owl Exclusion Plan shall be based on the recommendations made in the Staff Report on Burrowing Owl Mitigation and shall include the following information for each proposed passive relocation: ▪ Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species; ▪ Identification of type of scope to be used and appropriate timing of scoping; ▪ Occupancy factors to look for and what shall guide determination of vacancy and excavation timing; ▪ Methods for burrow excavation; ▪ Removal of other potential owl burrow surrogates or refugia on site; ▪ Methods for photographic documentation of the excavation and closure of the burrow; ▪ Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take; h. Methods for assuring the impacted site shall continually be made inhospitable to burrowing owls and fossorial mammals; and ▪ Method for compensatory mitigation for burrow loss.	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		3. If burrowing owls cannot be excluded from an off-site burrow and it is not feasible to maintain an avoidance buffer as stated above, coordination shall be conducted with CDFW to determine and implement appropriate measures to minimize impacts to off-site burrowing owls. Such measures could include, but are not limited to: 1) installation of barriers between the construction area and the occupied burrows to block noise and views of construction equipment and personnel, and 2) regular monitoring by a qualified biologist to determine if construction is resulting in disturbance of the owls that could lead to nest abandonment or harm to adult owls or their young. If such disturbance was occurring, the biological monitor would have the authority to halt construction until further modifications could be made to avoid disturbance of the owls. **BIO-1(g) Management of Permanent Avoidance Buffers.** If permanent avoidance buffers are established on the project site to protect burrowing owls, such areas shall be managed for the duration of the Project through decommissioning to preserve current values as foraging habitat for burrowing owl. Management shall include: 1) exclusion of all Project activities throughout the construction, operation, and decommissioning phases, including staging, parking, driving, or dumping; 2) vegetation management by grazing or mowing to preserve open, low-growing vegetation; 3) fencing to discourage human incursion; and 4) signing identifying the area as a biologically sensitive area managed for burrowing owl. **BIO-1(h) Swainson's Hawk and General Raptor Avoidance and Minimization.** If Project construction or decommissioning is initiated during the Swainson's hawk nesting season (March 1 through September 15), a qualified biologist shall conduct a pre-construction Swainson's hawk and general raptor nest survey of all potential nesting habitat within 0.5-mile of the Project site. The survey shall be conducted according to current Swainson's hawk protocol (Swainson's Hawk Technical Advisory Committee 2000). If no active nests are identified, no further mitigation would be required. If active Swainson's hawk nests are identified an avoidance buffer of 0.25 mile shall be established around active nests consistent with the CDFW Staff Report (California Department of Fish and Game 1994). If active nests of non-listed raptors are identified an appropriate avoidance buffer, as determined by the qualified biologist, shall be established. No construction within avoidance buffers shall be allowed until a qualified biologist has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the nest). If it is not feasible to maintain a 0.25-mile buffer for an active Swainson's hawk nest to reasonably accommodate construction, maintenance, or decommissioning activities, the established buffer	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		distance may be reduced through coordination with CDFW. Project activities within the reduced buffer shall be monitored at the discretion of a qualified biologist and based on coordination with CDFW. **BIO-1(i) Pre-Construction Survey for San Joaquin Kit Fox.** A qualified biologist shall conduct a preconstruction survey no more than 14 days prior to the beginning of ground disturbance and/or construction or decommissioning activities, or any other Project activity likely to impact San Joaquin kit fox. This is to determine if San Joaquin kit fox dens are present in or within 500 feet of the Project site (inaccessible areas outside of the Project site can be surveyed using binoculars or spotting scopes from public roads). The surveys shall be conducted in all areas of suitable habitat for San Joaquin kit fox. Surveys shall be phased so that surveys occur within 14 days prior to disturbance of any portion of the site. **BIO-1(j) San Joaquin Kit Fox Den Avoidance.** If potential dens are observed and avoidance of the dens is determined to be feasible by a qualified biologist in consultation with the Project Applicant and CDFW, the following minimum buffer distances shall be established prior to construction activities (consistent with USFWS standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance [USFWS 2011]): ▪ Potential den: 50 feet ▪ Atypical den: 50 feet ▪ Known den: 100 feet ▪ Natal/pupping den: at least 500 feet -USFWS must be contacted If occupied San Joaquin kit fox dens are observed on the site, USFWS must be contacted. If avoidance of potential dens is not feasible, the following measures are required to avoid potential adverse effects to the San Joaquin kit fox: 1. If the qualified biologist determines that potential dens are inactive after monitoring the den per the USFWS Standard Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011), the biologist shall excavate these dens by hand with a shovel to prevent foxes from re-using them during construction. 2. If the qualified biologist determines that a potential non-natal den may be active, an on-site passive relocation program may be implemented with prior concurrence from the USFWS. This program shall consist of excluding San Joaquin kit foxes from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for one week to confirm usage has been discontinued and excavation and collapse of the burrow to prevent	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		reoccupation. After the qualified biologist determines that the San Joaquin kit foxes have stopped using active dens within the Project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction with prior concurrence from USFWS. **BIO-1(k) Vehicle Speed Limits.** On-site vehicles shall observe a daytime speed limit of 20 mph and a nighttime speed limit of 10 mph throughout the Project site, except on County roads and state and federal highways. Off-road traffic shall be prohibited outside of designated Project areas. **BIO-1(l) Hole and Trench Covering and Inspection for Kit Fox.** To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of the Project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted. **BIO-1(m) Construction Pipe and Culvert Inspections for Kit Fox.** All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. **BIO-1(n) Trash Disposal.** During construction, operations, and decommissioning, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the construction site or Project site. **BIO-1(o) Firearm Restrictions.** No firearms shall be allowed on the Project site during construction, operations, and decommissioning. **BIO-1(p) Pet Restrictions.** No pets, such as dogs or cats, shall be permitted on the Project site to prevent harassment, mortality of kit foxes, or destruction of dens during construction, operations, and decommissioning.	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		BIO-1(q) Rodenticide and Herbicide Restrictions. During construction, operations, and decommissioning, use of rodenticides and herbicides in Project areas shall be in compliance with the approved pest and weed management plan. **BIO-1(r) Notification of Kill or Injury of Kit Fox.** During construction, operations, and decommissioning, a representative shall be appointed by the Project Applicant who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured, or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service. Any contractor, employee, or military or agency personnel responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFW immediately in the case of a dead, injured, or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or the wildlife biologist at (530) 934-9309. The USFWS shall be contacted at Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, CA 95825, (916) 414-6620 or (916) 414-6600. The Sacramento Fish and Wildlife Office and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during Project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. **BIO-1(s) Reporting of Kit Fox Sighting.** During construction, operations, and decommissioning, new sightings of kit fox shall be reported to the CNDDB. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the USFWS. **BIO-1(t) Site Restoration.** Upon completion of the Project and decommissioning, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be re-contoured if necessary, and revegetated to promote restoration of the area to pre- Project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the Project, but after Project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		methods and plant species used to revegetate such areas shall be in compliance with the approved Reclamation Plan. **BIO-1(u) Wildlife Fencing.** Fencing of the Solar Facility Project site shall incorporate wildlife-friendly fencing design. Fencing plans may use one of several potential designs that would allow kit foxes to pass through the fence while still providing for Project security and exclusion of other unwanted species (e.g., domestic dogs and coyotes). Raised fences or fences with entry/exit points of at least 6 inches in diameter spaced along the bottom of the fence to allow species such as San Joaquin kit fox access into and through the Project site would be appropriate designs.	
Impact BIO-2. The Project would not be located in or have a substantial adverse effect on any riparian habitat or other identified sensitive community.	No impact	No mitigation is required.	No impact
Impact BIO-3. The Solar Facility has the potential to substantially interfere with the local movement of wildlife and migratory birds on the Project site as a result of implementation of the Project.	Significant	The following mitigation measures are applicable to the Solar Facility and the PG&E Improvements. **BIO-3(a) Avian/Power Line Collision Avoidance and Minimization.** Construction of the gen-tie transmission line shall include installation of bird flight diverters, in accordance with the applicable measures of the most recent Avian Power Line Interaction Committee (APLIC) guidelines for minimizing avian collisions (Reducing Avian Collisions with Power Lines; APLIC 2012). Details of design components shall be indicated on all construction plans and be provided and approved by the County prior to construction. The applicant shall monitor for new versions of the APLIC collision guidelines and update designs or implement new measures as needed during Project construction, provided these actions do not require the purchase of previously ordered transmission line structures. Once constructed, all bird flight diverters shall be maintained for the duration of construction and operation. **BIO-3(b) Avian Electrocution Avoidance and Minimization.** The applicant shall design, construct, and maintain all transmission facilities, towers, poles, and lines in accordance with applicable policies set forth in the most recent APLIC Avian Protection Plan Guidelines for minimizing avian electrocutions (APLIC 2006). Details of design components shall be indicated on all construction plans and shall be provided and approved by County prior to construction. The Applicant shall monitor for new versions of the APLIC	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		guidelines and update designs or implement new measures as needed during Project construction.	
Impact BIO-4. The Solar Facility has the potential to conflict with local policies protecting biological resources.	Significant	BIO-1(a) through BIO-1(u) and BIO-3(a) and BIO-3(b) for the Solar Facility BIO-1(a) through BIO-1(s) and BIO-3(a) and BIO-3(b) for the PG&E Improvements	Less than Significant
Impact CR-1. Ground disturbing activities could cause a substantial adverse change in the significance of previously unknown archaeological resources, pursuant to CEQA Guidelines Section 15064.5.	Significant	The following mitigation measures are applicable to the Solar Facility and the PG&E Improvements: **CR-1(a) Retain a Qualified Archaeologist.** Prior to the issuance of construction/grading permits, the Applicant shall retain a Registered Professional Archaeologist or a monitor under their direction (qualified archaeologist) to carry out all mitigation measures related to archaeological and historical resources. **CR-1(b) Cultural Resources Awareness Program.** Prior to the commencement of construction/grading activities, the Applicant shall ensure that the qualified archaeologist has conducted a Cultural Resources Awareness Training for the general contractor, subcontractor(s), and all construction workers participating in earth disturbing activities. The training shall describe the potential of exposing archaeological resources, the types of cultural materials that may be encountered, and directions on the steps that shall be taken if such a find is encountered. This training may be presented alongside other environmental training programs required prior to construction. A training acknowledgment form must be signed by all workers who receive the training and retained. Additional trainings shall be conducted for all new construction personnel participating in earth disturbing activities throughout construction. **CR-1(c) Accidental Discovery Procedures.** In the event unanticipated archaeological resources are encountered during earth disturbing activities, compliance with federal and state regulations and guidelines regarding the treatment of cultural resources and/or human remains shall be required. 1. All construction activities within 50 feet shall halt and the County shall be notified. 2. A qualified archaeologist, defined as one meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, shall inspect the findings and report the results of the inspection to the developer and the County. 3. In the event that the identified archaeological resource is determined to be prehistoric, the County and qualified archaeologist will coordinate with and solicit input from the appropriate Native American Tribal Representatives	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		regarding significance and treatment of the resource as a tribal cultural resource. Any cultural resource of Native American origin discovered during Project work shall be treated in consultation with the tribe, with the goal of preserving in place with proper treatment. 4. If the County determines that the resource qualifies as a significant archaeological resource (as defined pursuant to the CEQA Guidelines) and that the Project has potential to damage or destroy the resource, mitigation shall be implemented in accordance with PRC Section 21083.2 and CEQA Guidelines Section 15126.4. Consistent with CEQA Guidelines Section 15126.4(b)(3), mitigation shall be accomplished through either preservation in place or, if preservation in place is not feasible, data recovery through excavation conducted by a qualified archaeologist implementing a detailed archaeological treatment plan.	
Impact CR-2. Ground disturbing activities could result in damage to previously unidentified human remains.	Less than Significant	No mitigation is required.	Less than Significant
Impact E-1. Construction, operation and maintenance, and decommissioning of the Project would not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources.	Less than Significant	No mitigation is required.	Less than Significant
Impact E-2. The Project would not conflict with or obstruct any state or local plans for renewable energy or energy efficiency.	No Impact	No mitigation is required.	No Impact

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact GEO-1. The Project would not directly or indirectly cause adverse effects, including risk of loss, injury, or death related to strong seismic ground shaking. The Project would not exacerbate risks associated with seismicity and structural design.	Less than Significant	No mitigation is required.	Less than Significant
Impact GEO-2. The Project could cause adverse effects including risk of loss, injury, or death related to ground failure including liquefaction. The Project would not exacerbate the risk of ground failure and would be constructed in compliance with applicable codes.	Significant	The following mitigation measure is applicable to the Solar Facility and the PG&E Improvements: **GEO-2 Reduction of Liquefaction Potential.** Prior to issuance of a grading permit, the applicant shall submit to the County Department of Public Works and Planning for review and approval, a ground improvement program prescribed by a qualified engineer to minimize liquefaction potential on the site. Measures to reduce liquefaction impacts could include, but may not be limited to, site preparation measures, foundation design measures such as removal and replacement of liquefiable soils, or others recommended by a structural engineer.	Less than Significant
Impact GEO-3. The Project would not result in substantial soil erosion or loss of topsoil.	Less than Significant	No mitigation is required.	Less than Significant
Impact GEO-4. The Project would not create substantial direct or indirect risks to life or property by being located on expansive soils.	Less than Significant	No mitigation is required.	Less than Significant
Impact GEO-5. The Project Site would have soils capable of accommodating a septic or other alternative wastewater disposal system.	Less than Significant	No mitigation is required.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact GEO-6. Ground disturbing activities associated with the Project have the potential to unearth or impact previously unidentified paleontological resources.	Significant	The following mitigation measures are applicable to the Solar Facility and the PG&E Improvements: **GEO-6(a) Retention of Qualified Paleontologist.** Prior to initial ground disturbance, the Applicant shall retain a Qualified Paleontologist, defined as a paleontologist who meets the Society of Vertebrate Paleontology's (SVP) standards (SVP 2010), to direct the implementation of Mitigation Measures GEO-6(b) through 6(d). A Qualified Paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an MS or PhD in paleontology or geology experienced with paleontological procedures and techniques, knowledgeable in the geology of California and the San Joaquin Valley, and who has worked as a paleontological mitigation project supervisor for a least one year. **GEO-6(b) Paleontological Mitigation and Monitoring Program.** Prior to construction activity the Qualified Paleontologist shall prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground-disturbance activity for the proposed Project. This program shall outline the procedures for construction staff WEAP training, paleontological monitoring extent and duration, salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications. **GEO-6(c) Paleontological Worker Environmental Program.** Prior to the start of construction, the Qualified Paleontologist or his or her designee, shall conduct WEAP training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The WEAP shall be conducted at a preconstruction meeting when the Qualified Paleontologist is present. In the event of a fossil discovery by construction personnel, all work in the immediate vicinity of the find shall cease and a qualified paleontologist shall be contacted to evaluate the find before restarting work in the area. If it is determined the fossil(s) is(are) scientifically significant, the qualified paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources. **GEO-6(d) Paleontological Monitoring and Reporting.** Prior to the start of construction activity, the Qualified Paleontologist retained under Mitigation Measure GEO-6(a) shall implement the Paleontological Mitigation and Monitoring Program as follows: 1. **Paleontological Monitoring.** Ground disturbing construction activities (including grading, trenching, foundation work and other excavations) exceeding 5 feet in depth shall be monitored on a full-time basis by a	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		qualified paleontological monitor during initial ground disturbance. Implementation of the Paleontological Mitigation and Monitoring Program shall be supervised by the Qualified Paleontologist. Monitoring shall be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the Qualified Paleontologist. If the Qualified Paleontologist determines that full-time monitoring is no longer warranted, he or she may authorize, after approval of the County, that monitoring be reduced to periodic spot-checking or ceased entirely. Monitoring shall be reinstated if any new or unforeseen deeper ground disturbances are required and reduction or suspension would need to be reconsidered by the Qualified Paleontologist. Ground disturbing activity that does not exceed 5 feet in depth shall not require paleontological monitoring. 2. **Salvage of Fossils.** If fossils are discovered, the Qualified Paleontologist or paleontological monitor shall recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the paleontologist shall have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. 3. **Preparation and Curation of Recovered Fossils**. Once salvaged, significant fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the University of California Museum of Paleontology), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Qualified Paleontologist. 4. **Final Paleontological Mitigation Report**. Upon completion of ground disturbing activity (and curation of fossils if necessary), the Qualified Paleontologist shall prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report shall include discussion of the location, duration and methods of	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.	
Impact GHG-1. Construction, operation, and decommissioning of the Project would directly and indirectly generate GHG emissions. However, such emissions would be offset by the long-term generation of renewable energy and the Project would be consistent with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions.	Less than Significant	No mitigation is required.	Less than Significant
Impact HAZ-1. The Project would not involve the routine transport, use, or disposal of hazardous materials. Therefore, the Project would not create a significant hazard to the public or the environment.	Less than Significant	No mitigation is required.	Less than Significant
Impact HAZ-2. Accidental release of hazardous materials could occur during construction, operation and maintenance, and decommissioning of the Project.	Less than Significant	No mitigation is required.	Less than Significant
Impact HAZ-3. Earthmoving activities associated with construction of the Project could result in the release of *Coccidioides* spores into the air, which can cause Valley Fever.	Significant	The following mitigation measures are applicable to the Solar Facility and the PG&E Improvements: **HAZ-3(a) Valley Fever Management Plan.** The Project applicant shall consult with the County, San Joaquin Valley Air Pollution Control district, and Cal/OSHA to develop a Valley Fever Management Plan that includes specific measures to reduce the potential for exposure to Valley Fever. Before grading permits can be issued, the applicant shall submit the Valley Fever Management Plan to the County for review and approval. The Valley Fever Management Plan shall include a program to evaluate the potential for exposure to Valley Fever from construction activities and to identify appropriate dust management and safety procedures that shall be implemented, as needed, to minimize personnel and public exposure to potential Valley Fever-containing dust. Measures in the Valley	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		Fever Management Plan, which shall be implemented as applicable, may include the following: ▪ Provide High Efficiency Particulate Air (HEPA)-filtered air-conditioned enclosed cabs on heavy equipment. Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment. ▪ Provide communication methods, such as two-way radios, for use in enclosed cabs. ▪ Provide National Institute for Occupational Safety and Health-approved respirators for workers. ▪ Conduct a job hazard analysis in compliance with Cal/OSHA regulations for any worker that will be exposed to dust. ▪ Require half-face respirators equipped with N-100 or P-100 filters to be used during digging if determined to be warranted after conducting a job hazard analysis. ▪ Require employees to wear respirators when working near earthmoving machinery if determined to be warranted after conducting a job hazard analysis. ▪ Require employees to be medically evaluated, fit-tested, and properly trained on the use of the respirators, and implement a full respiratory protection program in accordance with the applicable Cal/OSHA Respiratory Protection Standard (8 CCR 5144). ▪ Provide separate, clean eating areas with handwashing facilities. ▪ Thoroughly clean construction tools, equipment, and vehicles with water before they are moved off-site to other work locations. ▪ Wheel-washing facilities with water-recycling systems shall be provided at all site egress points. Vehicles leaving the site on a daily basis shall utilize wheel-washing facilities in order to reduce dust migration off the Project site. ▪ On-site workers shall be required to change clothes after work every day before leaving the work site, to prevent distribution of Coccidioides to non-endemic areas. As an alternative, disposable Tyvek® or equivalent work suits and work boots for use on-site shall be provided for workers. ▪ Work with a medical professional to develop a protocol to medically evaluate employees who develop symptoms of Valley Fever. Reporting of symptoms of Valley Fever and diagnosed cases of Valley Fever must occur consistent with Cal/OSHA requirements.	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		HAZ-3(b) Valley Fever Dust Suppression Measures. If wind speeds exceed 15 miles per hour or temperatures exceed 95 degrees Fahrenheit for three consecutive days, additional dust suppression measures (such as additional water or the application of additional soil stabilizer) shall be implemented prior to and immediately following ground disturbing activities. The additional dust suppression shall continue until winds are 10 miles per hour or lower and outdoor air temperatures are below 90 degrees Fahrenheit for at least two consecutive days. The additional dust suppression measures shall be incorporated into the Final Construction Management Plan. The Final Construction Management Plan shall be submitted to the County for review and approval prior to the issuance of any grading permit. **HAZ-3(c) Valley Fever Worker Training Program and Safety Measures.** Prior to any Project grading activity, the primary construction contractor shall prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The objective of the training shall be to ensure that workers are aware of the dangers associated with Valley Fever. The worker training program shall be included in the standard in-person training for construction workers and shall identify safety measures to be implemented by construction contractors during construction, including all safety measures included in the Valley Fever Management Plan prepared pursuant to Mitigation Measure HAZ-3(a). Prior to initiating any grading, the Project applicant shall provide the County with copies of all educational training material for review and approval. No later than 30 days after any new employee(s) begin work, the Project applicant shall submit evidence to the County that each employee has acknowledged receipt of the training (e.g., sign-in sheets with a statement verifying receipt and understanding of the training). **HAZ-3(d) Valley Fever Information Handout.** The Project applicant shall work with a medical professional, in consultation with the County, to develop an educational handout for on-site workers, and include the following information on Valley Fever: the potential sources/causes, the common symptoms, the options or remedies available should someone be experiencing these symptoms, and places where testing for exposure is available. Prior to construction permit issuance, this handout shall have been created by the applicant and reviewed by the County. A printed version of this handout shall be provided to all on-site workers on their first day at the Project site.	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact HAZ-4. Construction of the Solar Facility has the potential to encounter asbestos-containing materials, which could result in a significant hazard to the public or environment.	Significant	The following mitigation measure is applicable to the Solar Facility only: **HAZ-4 Suspected Asbestos-Containing Materials.** The Project proponent shall comply with the following mitigation in the event that materials suspected to contain asbestos are uncovered during construction activities: 1. If suspected asbestos-containing materials are discovered during Project construction activities, work within a 100-foot distance of the discovery shall immediately halt and a California certified asbestos professional shall take samples for analysis of the suspect materials. 2. All damaged asbestos-containing materials and asbestos-containing materials that would be disturbed by Project construction activities shall be removed in accordance with federal, state, and local laws and the National Emissions Standards for Hazardous Air Pollutants guidelines before work may recommence. 3. All construction activities shall be undertaken in accordance with Cal/OSHA standards, as contained in Title 8 of the Cal. Code Regs., Section 1529, to protect workers from exposure to asbestos. Construction shall be performed in conformance with federal, state, and local laws and regulations so construction workers and/or the public avoid significant exposure to asbestos-containing materials.	Less than Significant
Impact HAZ-5. Construction of the Solar Facility has the potential to encounter petroleum products in the on-site soil, which could result in a significant hazard to the public or environment.	Significant	The following mitigation measure is applicable to the Solar Facility only: **HAZ-5 Hazardous Materials Soil Sampling and Remediation.** Prior to issuance of grading permits, for construction activities near the potential Recognized Environmental Concerns, additional soil samples testing for total petroleum hydrocarbons shall be performed near the on-site agricultural wells and pumps, fuel ASTs, turbine oil ASTs, diesel powered agricultural engines, and engine oil ASTs under the supervision of a professional geologist or professional engineer. The County shall review the results of the soil sampling to determine if any additional investigation or remedial activities are deemed necessary. No work shall resume in that area until the County has provided written authorization that the area does not warrant any additional action. If concentrations of contaminants are identified in areas of the Project site and are confirmed to pose a potential risk to human health and/or the environment by a qualified environmental specialist, contaminated materials shall be remediated either prior to or concurrent with construction. Remediation shall generally include a management plan which establishes design and implementation of remediation. Cleanup may include excavation, disposal, bio-	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
		remediation, and/or any other treatment of conditions subject to regulatory action. All necessary reports, regulations and permits shall be followed to achieve cleanup of the site. The contaminated materials shall be remediated under the supervision of an environmental consultant licensed to oversee such remediation and under the direction of the lead oversight agency. The remediation program shall also be approved by the County. All proper waste handling and disposal procedures shall be followed. Upon completion of the remediation, the environmental consultant shall prepare a report summarizing the project, the remediation approach implemented, and the analytical results after completion of the remediation, including all waste disposal or treatment manifests.	
Impact HAZ-6. The Project would not directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires.	Less than Significant	No mitigation is required.	Less than Significant
Impact HWQ-1. The Project would not violate any water quality standards or waste discharge requirements.	Less than Significant	No mitigation is required.	Less than Significant
Impact HWQ-2. The Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the Project would impede sustainable groundwater management of the basin.	Less than Significant	No mitigation is required.	Less than Significant
Impact HWQ-3. The Project would not substantially alter the existing drainage pattern such that substantial erosion, siltation, flooding, an exceedance of stormwater system capacity, or impedance to flood flows would occur.	Less than Significant	No mitigation is required.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact HWQ-4. Part of the Solar Facility site is located within the 100-year floodplain; however, floodwater patterns would not be altered when compared to existing conditions, and potential impacts associated with impedance and redirection of flood flows would be less than significant. In the 100-year flood event, the portions of the Solar Facility site located in Zone A would potentially be inundated. Therefore, if pollutants on the Solar Facility site are not properly stored and managed in emergency flood events, a significant impact related to release of pollutants could occur.	Significant	The following mitigation measure is applicable to the Solar Facility only: **HWQ-4 Hazardous Materials Business Plan Inundation Measures.** In addition to the HMBP requirements established by California Health and Safety Code Section 25500 and the Fresno County Division of Environmental Health, the Project's HMBP shall include a flood inundation plan in the emergency response plan section.	Less than Significant
Impact LU-1. The Project would be consistent with the Fresno County General Plan, County Zoning Ordinance, and County Solar Guidelines, and would therefore not conflict with applicable plans, policies, or guidelines adopted for the purpose of avoiding or mitigating an environmental effect.	No impact	No mitigation is required.	No impact
Impact N-1. The Project would not result in the generation of a substantial temporary or permanent increase in noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	Less than Significant	No mitigation is required.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact N-2. Ground-borne vibration levels during construction of the Project would not be excessive or result in substantial disturbance of nearby residents. Increased long-term traffic on regional highways during operation of the Project would not substantially increase ambient vibration levels.	Less than Significant	No mitigation is required.	Less than Significant
Impact T-1. The Project would not result in a substantial increase in vehicle miles traveled (VMT) that would conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).	Less than Significant	No mitigation is required.	Less Than Significant
Impact T-2. The Project would not substantially increase traffic hazards due to a geometric design feature or incompatible uses.	Less than Significant	No mitigation is required.	Less than Significant
Impact T-3. The Project would not result in inadequate emergency access.	Less than Significant	No mitigation is required.	Less than Significant
Impact USS-1. The Project includes the construction of a new on-site septic tank and leach field and stormwater drainage, electric power, and telecommunications facilities, the environmental effects of which are analyzed throughout this EIR. These facilities would be adequate to serve the Project site, and no additional or expanded facilities would be required.	Less than Significant	No mitigation is required.	Less than Significant
Impact USS-2. Sufficient water supplies from existing entitlements and resources are available to serve the project during normal, dry, and multiple dry years.	Less than Significant	No mitigation is required.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure (s)	Level of Significance After Mitigation
Impact USS-3. The Project would comply with applicable solid waste management and reduction statutes and regulations and would not generate solid waste in excess of state or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	Less than Significant	No mitigation is required.	Less than Significant

1 Introduction

This document is an Environmental Impact Report (EIR) for the proposed Scarlet Solar Energy Project (hereafter referred to as the "Project"). This section discusses (1) the Project and EIR background; (2) the legal basis for preparing an EIR; (3) the scope and content of the EIR; (4) issue areas found not to be significant by the Project Initial Study; (5) the lead, responsible, and trustee agencies; and (6) the environmental review process required under the California Environmental Quality Act (CEQA). The Project is described in detail in Section 2, *Project Description*.

1.1 Purpose and Legal Authority

The Project requires the discretionary approval of the Fresno County Planning Commission; therefore, the Project is subject to the environmental review requirements of CEQA. In accordance with Section 15121 of the CEQA Guidelines (California Code of Regulations, Title 14), the purpose of this EIR is to serve as an informational document that:

> ...will inform public agency decision makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.

This EIR has been prepared as a project EIR pursuant to Section 15161 of the CEQA Guidelines. A project EIR is appropriate for a specific development project. As stated in the CEQA Guidelines:

> This type of EIR should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project, including planning, construction, and operation.

This EIR is to serve as an informational document for the public and Fresno County decision makers. The process will include one or more public hearings before the Planning Commission and possibly the Board of Supervisors to consider certification of a Final EIR and approval of the proposed Project.

1.2 Environmental Impact Report Background

The County of Fresno prepared an Initial Study and circulated a Notice of Preparation (NOP) regarding this EIR for a 34-day agency and public review period, starting on September 12, 2018 and ending on October 15, 2018. The Initial Study determined that the Project required the preparation of an EIR to further evaluate potentially significant impacts related to the following environmental issue areas: aesthetics, agriculture, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, transportation, and utilities and service systems. In addition, the County held an EIR Scoping Meeting on October 11, 2016 at the Mendota Library, located at 1246 Belmont Avenue. The County received letters from five agencies and three County departments during the public review period in response to the NOP. No verbal comments were received during the EIR Scoping Meeting. The Initial Study, NOP, and NOP response letters are presented in Appendix A to this EIR.

Key issues of concern noted in the NOP responses are summarized in Table 1-1.

Table 1-1 NOP Comments and EIR Responses

Commenter	Comment/Request	Where Comment is Addressed in EIR
County Comments		
County of Fresno – Development Services Division	Per the Operational Statement, eight (8) permanent employees will occupy the Operations and Maintenance Building (O&M), therefore 4 parking stalls shall be required (one of which shall be ADA accessible compliant) for O&M building. A driveway, minimum of 24 feet and maximum of 35 feet in width as approved by the Road Maintenance and Operation Division for the first 100 feet, off the edge of the ultimate right-of-way and shall be concrete or asphalt. An encroachment permit shall be required from the State of California (Caltrans) for any work done on the state right-of-way (Highway 33). Internal access roads shall comply with required widths by the Fire District for emergency apparatus Any proposed gate that provides initial access to this site shall be setback from the edge of the road right-of-way a minimum of 20 feet or the length of the longest vehicle to enter the site, whichever is greater. No building height or structure erected in the AE (Exclusive Agriculture) District should exceed 35 feet in height; per Section 816.5.D of the Zoning Ordinance. An Encroachment Permit will be required for any improvements within the County right-of-way prior to commencement of construction. All proposed signs require submittal to the Department of Public Works and Planning permits counter to verify compliance with the Zoning Ordinance. Off-site advertising for commercial uses are prohibited in the AE Zone District.	These comments pertain to project design and are not comments regarding the environmental analysis for the Project. Adherence to regulations such as the County Municipal Code, Zoning Ordinances, and permitting would be required as part of the approval process. These comments are incorporated and addressed in Section 2, *Project Description*, Section 4.11, *Land Use*, and Section 4.13, *Transportation*, as applicable.
	Outdoor lighting should be hooded and directed away from adjoining streets and properties.	Comment is addressed in Section 2, *Project Description* and Section 4.1, *Aesthetics*.

Commenter	Comment/Request	Where Comment is Addressed in EIR
County of Fresno – Department of Public Works and Planning – Road Maintenance and Operations Division	Based on the review of similar types of solar projects, the transportation impacts from the construction traffic could be significant. The traffic study should evaluate impacts of concentrated truck traffic on structural viability of the pavement and impacts on levels of service. The traffic study should analyze the traffic index resulting from construction traffic and construct structural improvements needed prior to hauling operations. Impacts and improvements would be lessened if improvements are done before construction truck traffic. The traffic study should explore various alternatives to address structural pavement section needs and include a phasing plan for implementation if necessary. If hauling operations occur prior to necessary pavement section improvements, then routine maintenance of haul routes should be implemented if the roads are impacted.	Comments are addressed in Section 4.13, *Transportation*.
Agency Comments		
Department of Conservation – Division of Land Resource Protection	The conversion of agricultural land represents a permanent reduction and significant impact to California's agricultural land resources. A lead agency should not approve a project if there are feasible alternatives or feasible mitigation measures available that would lessen the significant effects of the project. All mitigation measures that are potentially feasible should be included in the Draft EIR. The Department recommends the following discussion under Agricultural Resources: ▪ Type, amount, and location of farmland conversion resulting directly and indirectly from the Project. ▪ Impacts to any current or future agricultural operations in the vicinity. ▪ Incremental impacts leading to cumulative impacts, as well as potential mitigation measures for all impacted agricultural lands in the Project area.	Comments are addressed in Section 4.2, *Agricultural Resources*.

Commenter	Comment/Request	Where Comment is Addressed in EIR
United State Fish and Wildlife Service	Based on review of California Natural Diversity Database, the proposed project is within 10 miles of vernal pool fairy shrimp occurrences, longhorn fairy shrimp occurrences, and San Joaquin wooly-thread occurrences. In addition, it is within 5 miles of a San Joaquin kit fox occurrence. Discuss potential impacts to potential species on-site such as vernal pool fairy shrimp, kit fox, and San Joaquin wooly-threads. Recommendation that a habitat assessment be conducted for the Project site.	Comments are addressed in Section 4.4, *Biological Resources*.
Native American Heritage Commission	Provided summary of CEQA, SB 18, and AB 52 regulations and cultural resource assessment recommendations the project should review and consider with respect to tribal resources.	Comment is addressed in Section 4.15, *Issues Addressed in the Initial Study.*
San Joaquin Valley Air Pollution Control District	The District's initial review of the NOP concludes that emissions resulting from construction and/or operation of the Project may exceed thresholds of significance. Discussion of construction and operational phase emissions. Evaluation of nuisance odors and toxic air contaminants (TAC). Discussion of methodology, modeling assumptions, inputs, and results used to determine Project's impact on air quality. Discussion of Project design elements, mitigation measures, and cumulatively considerable increases of criteria pollutants.	Comments are addressed in Section 4.3, *Air Quality,* Section 4.8, *Greenhouse Gas Emissions*.

1.3 Scope and Content

This EIR addresses impacts identified by the Initial Study to be potentially significant. Potentially significant impacts in the following issue areas have been studied in the EIR:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Transportation
- Utilities and Service Systems

In preparing the EIR, use was made of pertinent County policies and guidelines, certified EIRs and adopted CEQA documents, and other background documents. References are included at the end of each section.

The alternatives section of the EIR (Section 6) was prepared in accordance with Section 15126.6 of the CEQA Guidelines and focuses on alternatives capable of eliminating or reducing significant adverse effects associated with the Project, while feasibly attaining most of the basic project objectives. In addition, the alternatives section identifies the "environmentally superior" alternative among the alternatives assessed. The alternatives evaluated include the CEQA-required "No Project" alternative and one alternative development scenarios for the Project area.

The level of detail contained throughout this EIR is consistent with the requirements of CEQA and applicable court decisions. Section 15151 of the CEQA Guidelines provides the standard of adequacy on which this document is based. The Guidelines state:

> An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good faith effort at full disclosure.

1.4 Issues Not Studied in Detail in the EIR

Table 1-2 briefly summarizes issues from the environmental checklist addressed in the Initial Study (Appendix A) and determined to be less than significant or to have no impact. As indicated in the Initial Study, there is no substantial evidence that significant impacts would occur in any of these issue areas. In addition to Table 1-2, a discussion of these issues can be found in Section 4.15, *Issues Addressed in the Initial Study*.

Table 1-2 Issues Not Studied in Detail in the EIR

Issue Area	Initial Study Conclusions
Aesthetics	There are no designated scenic vistas or state scenic highways in the viewshed of the Project site. There would be no impact associated with scenic vistas or state scenic highways.
Agriculture and Forestry Resources	The Project site and immediate vicinity does not contain any land defined as forest land, timberland or timberland zoned Timberland Production. There would be no impact associated with forestry resources.
Air Quality	The Project involves the construction, operation and maintenance, and decommissioning of a solar energy facility and associated infrastructure which do not produce other emissions, including those leading to odors, that would affect a substantial number of people. There would be no impact associated with other emissions.
Biological Resources	The Project site consists of agricultural land and is not traversed by any drainages or washes. The Project site does not contain any federally protected wetlands as defined by Section 404 of the Clean Water Act, or waters of the State that would be affected by the Project. There would be no impact associated with protected waters or wetlands. The Project site is not located within the boundaries of any applicable adopted Habitat Conservation Plan or Natural Community Conservation Plan. There would be no impact associated with Habitat Conservation Plans or Natural Community Conservation Plans.
Cultural Resources	No historical resources as defined in CEQA Guidelines Section 15064.5 were identified on the Project site. Impacts associated with cultural resources would be less than significant.
Geology and Soils	The Project site is not located in an Earthquake Fault Rupture hazard zone as defined under the Alquist-Priolo Earthquake Fault Zoning Act, and no active or potentially active faults are mapped within the Project site. There is no substantial evidence that an otherwise active fault capable of producing fault rupture underlies the Project site. Therefore, the Project would not directly or indirectly cause potential adverse effects from fault rupture and there would be no impact. There are no hillsides and other geographic features associated with landslide hazards present at the Project site. There would be no impact associated with landslides.
Hazards and Hazardous Materials	The Project site is not located within 0.25 mile of an existing or proposed school. The project would not emit or handle hazardous materials within 0.25 mile of an existing or proposed school. There would be no impact. The Project would not be located on a site included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and would not create a significant hazard to the public. There would be no impact. The Project site is not located within an airport land use plan or near a private airstrip, implementation would not result in a safety hazard or excessive noise for people residing or working in the Project area. There would be no impact. Construction, operation and maintenance, and decommissioning would not involve the closure of roadways, interfere with identified evacuation routes, restrict access for emergency response vehicles, or restrict access to critical facilities such as hospitals or fire stations. Impacts would be less than significant.
Land Use and Planning	There are no established communities in the area; therefore, the Project would not physically divide an established community and there would be no impact.
Mineral Resources	The Project site is not located in a mineral resource zone as defined by the California Department of Conservation California Geological Survey. The Solar Facility and PG&E Improvements would not entail construction of structures or facilities for the purposes of extraction or exploration of mineral resources and would not result in the loss of availability of a mineral resource. No impact related to mineral resources would occur.
Noise	The Project site is not located in an airport land use plan or near a private airstrip. There would be no impact associated with exposing workers to excessive noise from an airport.

Issue Area	Initial Study Conclusions
Population and Housing	The Project would not include any new homes or businesses, and would not directly or indirectly induce substantial population growth. There would be no impact associated with substantial population growth. There are no temporary or permanent housing units on the Project site. Therefore, the Project would not displace any existing housing units or people. There would be no impact associated with displacing existing residences or people.
Public Services	The Project would neither involve the construction of new or physically altered governmental facilities nor result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts. Increases in demand for public services requiring new or physically altered governmental facilities are typically associated with substantial increases in population. The Project would not include new residences or a significantly large-scale development that cannot be provided with services through existing facilities. Impacts to public services would be less than significant.
Recreation	The Project does not include new residences and would not increase the population. No substantial new population growth resulting in physical deterioration of existing recreational facilities would occur. The Project would not require the construction of new or expanded recreational facilities. No impact to recreation would occur.
Transportation	There are no existing or planned pedestrian, bicycle, or transit facilities within the Project area with which the Project could interfere. In addition, the Project would not introduce a barrier to non-motorized travel. There would be no conflict with adopted policies, plans, or programs supporting public transit, bicycle, or pedestrian modes, and since there are no facilities in the affected area. The Project would not decrease the performance or safety of public transit, bicycle, or pedestrian facilities. There would be no impact.
Tribal Cultural Resources	A search of the Native American Heritage Commission Sacred Lands Inventory identified no known Native American traditional sites/places on the Project site. The County conducted consultation under AB 52, providing notification to the Table Mountain Rancheria, Dumna Wo Wah, Santa Rosa Rancheria, and the Picayune Rancheria of the Chukchansi Indians on May 4, 2018. Table Mountain Rancheria declined participation in a letter dated May 17, 2018, and no other responses were received within 30 days. There would be no impact to tribal cultural resources.
Utilities and Service Systems	The Project site would not be served by a municipal wastewater treatment provider. No impact associated with wastewater service would occur.

1.5 Lead, Responsible, and Trustee Agencies

The CEQA Guidelines define lead, responsible and trustee agencies. The County of Fresno is the lead agency for the Project because it holds principal responsibility for approving the Project.

A responsible agency refers to a public agency other than the lead agency that has discretionary approval over the project. Responsible agencies include the Central Valley Regional Water Quality Control Board, which regulates water quality in the region, the San Joaquin Valley Air Pollution Control District, which regulates air quality in the region, and the California Public Utilities Commission, which would regulate the PG&E improvements. The San Joaquin Valley Air Pollution Control District submitted comments on the Initial Study, provided in Appendix A, and summarized in Table 1-1. The EIR will also be submitted to these agencies for review and comment.

A trustee agency refers to a state agency having jurisdiction by law over natural resources affected by a project. California Department of Fish and Wildlife (CDFW) may be a trustee agency for the proposed Project.

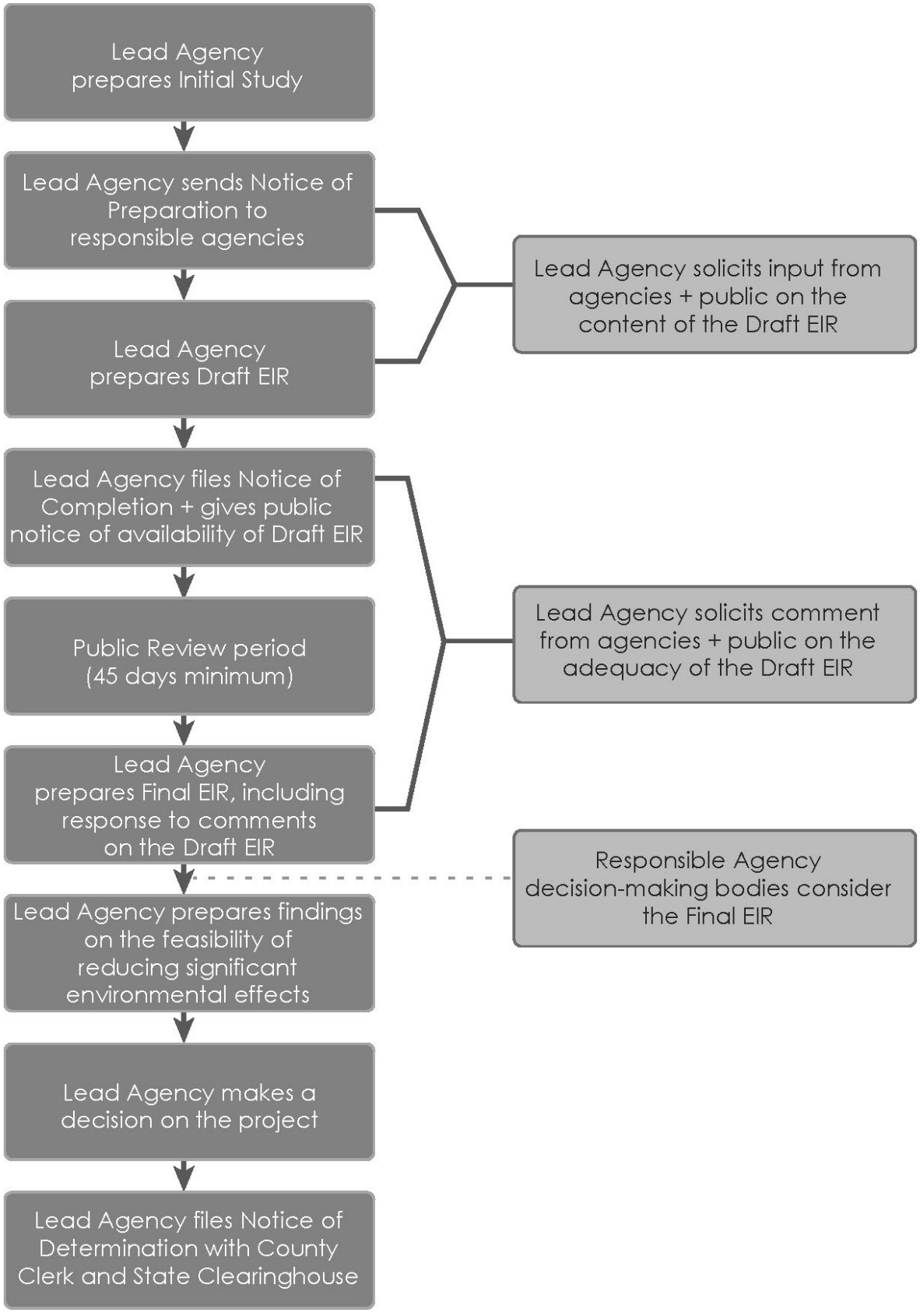
1.6 Environmental Review Process

The environmental impact review process, as required under CEQA, is summarized below, and illustrated in Figure 1-1. The steps are presented in sequential order.

1. **Notice of Preparation (NOP) and Initial Study**. After deciding that an EIR is required, the lead agency (County of Fresno) must file a NOP soliciting input on the EIR scope to the State Clearinghouse, other concerned agencies, and parties previously requesting notice in writing (CEQA Guidelines Section 15082; Public Resources Code Section 21092.2). The NOP must be posted in the County Clerk's office for 30 days. The NOP may be accompanied by an Initial Study that identifies the issue areas for which the project could create significant environmental impacts. The NOP for this EIR was accompanied by an Initial Study and was circulated for a 34-day agency and public review period that started on September 12, 2018 and ended on October 15, 2018.
2. **Draft EIR Prepared.** The Draft EIR must contain: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) discussion of significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); f) a discussion of alternatives; g) mitigation measures; and h) discussion of irreversible changes.
3. **Notice of Completion (NOC).** The lead agency must file a NOC with the State Clearinghouse when it completes a Draft EIR and prepare a Public Notice of Availability of a Draft EIR. The lead agency must place the NOC in the County Clerk's office for 30 days (Public Resources Code Section 21092) and send a copy of the NOC to anyone requesting it (CEQA Guidelines Section 15087). Additionally, public notice of Draft EIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must solicit input from other agencies and the public and respond in writing to all comments received (Public Resources Code Sections 21104 and 21253). The minimum public review period for a Draft EIR is 30 days. When a Draft EIR is sent to the State Clearinghouse for review, the public review period must be 45 days unless the State Clearinghouse approves a shorter period (Public Resources Code Section 21091).
4. **Final EIR.** A Final EIR must include: a) the Draft EIR; b) copies of comments received during public review; c) list of persons and entities commenting; and d) responses to comments.
5. **Certification of Final EIR.** Prior to making a decision on a proposed project, the lead agency must certify that: a) the Final EIR has been completed in compliance with CEQA; b) the Final EIR was presented to the decision-making body of the lead agency; and c) the decision-making body reviewed and considered the information in the Final EIR prior to approving a project (CEQA Guidelines Section 15090).
6. **Findings/Statement of Overriding Considerations**. For each significant impact of the project identified in the EIR, the lead agency must find, based on substantial evidence, that either: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (CEQA Guidelines Section 15091). If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that sets forth the specific social, economic, or other reasons supporting the agency's decision.

7. **Mitigation Monitoring Reporting Program.** When the lead agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.
8. **Lead Agency Project Decision.** The lead agency may a) disapprove the project because of its significant environmental effects; b) require changes to the project to reduce or avoid significant environmental effects; or c) approve the project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (CEQA Guidelines Sections 15042 and 15043).
9. **Notice of Determination (NOD).** The lead agency must file a NOD after deciding to approve a project for which an EIR is prepared (CEQA Guidelines Section 15094). A local agency must file the NOD with the County Clerk. If responsible state agencies are involved, the NOD must also be filed with the State Clearinghouse. The NOD must be posted for 30 days and sent to anyone previously requesting notice. Posting of the NOD starts a 30-day statute of limitations on CEQA legal challenges (Public Resources Code Section 21167[c]).

Figure 1-1 Environmental Review Process



2 Project Description

This section describes the proposed Project, including the Project site and surrounding land uses, major Project characteristics, Project objectives, and discretionary actions needed for Project approval.

2.1 Project Overview

The Scarlet Solar Energy Project (Project) is proposed by RE Scarlet LLC (Applicant), a wholly owned subsidiary of EDP Renewables North America LLC (EDPR NA). The Applicant has applied to the Fresno County Department of Public Works and Planning (the County) for an Unclassified Conditional Use Permit (CUP) to construct, operate, maintain, and decommission a solar photovoltaic (PV) electricity generating facility (referred to in this document as the Solar Facility) and energy storage system and associated infrastructure to be known as the Scarlet Solar Energy Project. The Solar Facility would generate a total of up to 400 megawatts (MW) of alternating current (AC) at the point of electrical grid interconnection on approximately 4,089 acres in unincorporated western Fresno County. The Project would provide solar power to utility customers by interconnecting to the regional electricity grid at Pacific Gas and Electric Company's (PG&E) Tranquillity Switching Station located approximately 0.75 mile west of the Project site.

The Project would operate year-round to generate solar electricity during daylight hours and would store and dispatch power to the energy storage system during both daylight and non-daylight hours. The Project is anticipated to be constructed in continuous phases, with the first phase beginning in late-2021.

Components of the Project would include the following, which are further described below:

- Groups of solar arrays (arrays include PV modules and steel support structures, electrical inverters, transformers, cabling, and other infrastructure);
- Two electrical substations;
- A switchyard, including one high-voltage 230 kV utility switchyard, a supervisory control and data acquisition (SCADA) system, and two 65-foot-high dead-end structures;
- Approximately 3.1 miles of 230 kV generation intertie (gen-tie) transmission line (from the substations and the Project 230 kV switchyard) to connect to PG&E's existing Tranquillity Switching Station;
- Improvements to PG&E electrical infrastructure, including a minor expansion of PG&E's Tranquillity Switching Station and approximately 1,900 feet of PG&E 230 kV transmission line to connect the 230 kV gen-tie line to the Tranquillity Switching Station;
- A 400 MW energy storage system, consisting of battery enclosures and electrical cabling; and
- Other necessary infrastructure, including one permanent operation and maintenance (O&M) building, a septic system and leach field, a meteorological data system, buried conduit for electrical wires, overhead collector lines, on-site access roads, a shared busbar,[1] lighting, and wildlife-friendly security fencing.

[1] A busbar is a system of electrical conductors in a generating or receiving station on which power is concentrated for distribution to several electrical circuits.

2.2 Lead Agency

County of Fresno
Department of Public Works and Planning
2220 Tulare Street, Suite A
Fresno, California 96721
Contact: Ejaz Ahmad
(559) 600-4204

PG&E's Tranquillity Switching Station is under jurisdiction of the California Public Utilities Commission (CPUC). PG&E would be responsible for constructing the improvements to the PG&E infrastructure described above (PG&E Improvements; see fifth bullet under Section 2.1). The CPUC would be the sole authority for approval of PG&E activities, and the CPUC may use this EIR as a responsible agency under General Order 131-D.

2.3 Project Applicant

RE Scarlet LLC
53 SW Yamhill St
Portland, Oregon 97204
Contact: Sam Alexander, Senior Project Development Manager

RE Scarlet LLC (the Applicant) is a wholly owned subsidiary of EDPR NA. Recurrent Energy was the previous project applicant and is referenced where applicable, including as a reference to information or graphics provided by Recurrent Energy.

2.4 Property Owner

Westlands Water District
3130 North Fresno Street
Fresno, California 93703

2.5 Project Location

The Project site is located in unincorporated Fresno County, approximately 3.5 miles west-southwest of the community of Tranquillity and approximately 6.5 miles east of Interstate 5 (I-5). The Project site is northeast of and adjacent to the Great Valley Solar Facility (previously the Tranquillity Solar Facility). The Project site would encompass up to 33 parcels[2] located generally south of West South Avenue, north of West Dinuba Avenue, east of South Ohio Avenue and State Route (SR) 33 (South Derrick Avenue), and west of South San Mateo Avenue. Figure 2-1 and Figure 2-2 show the location of the Project site on regional and local scales, respectively. Figure 2-3

[2] The Project will be constructed on any or all of assessor parcels 028-07-134, 028-07-139, 028-07-140, 028-07-141, 028-07-143, 028-07-144, 028-07-145, 028-07-147, 028-07-148, 028-07-149, 028-08-166, 028-11-101, 028-11-102, 028-11-104, 028-11-106, 028-11-107, 028-11-109, 028-11-110, 028-11-112, 028-11-113, 028-11-114, 028-11-115, 028-11-116, 028-11-117, 028-11-119, 028-11-120, 028-12-061, 028-12-062, 028-10-074, 028-10-072, 028-10-082, 028-10-081, and 028-101-75S.[3] The project site excludes assessor parcels 028-12-033, 028-12-035, 028-12-037, and 028-12-039.

shows the preliminary site plan. Figure 2-2 and Figure 2-3 show that the Project site encompasses approximately 76 acres of federally owned land that are not part of the Project.[3]

2.6 Existing Site Characteristics

2.6.1 Existing Land Use

The Project site is designated as Agriculture in the Fresno County General Plan (2000) and is zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size). All of the parcels are currently owned by Westlands Water District.[4]

The existing land use of the Project site is primarily dry-farmed agriculture. For the past 10 years, the Project site intermittently has been in low-yield agricultural production (tilled, seeded, and harvested for winter wheat); intermittently irrigated (drip or sprinkler) and harvested for alfalfa seed or other crops; or disked twice a year and left fallow. The site is subject to high levels of selenium and a water table that does not provide for sufficient drainage for most commercially-irrigated crops. Furthermore, all the parcels in the project footprint are part of Westlands Water District settlements that require a non-irrigation covenant upon transfer of ownership. For the portion of the Project site that is cultivated without the benefit of irrigation, the productivity of these crops depends entirely on rainfall. When the unirrigated crops fail to mature to harvest, the land is grazed as rangeland grasses. There are no Williamson Act contracts binding any of the parcels.[5]

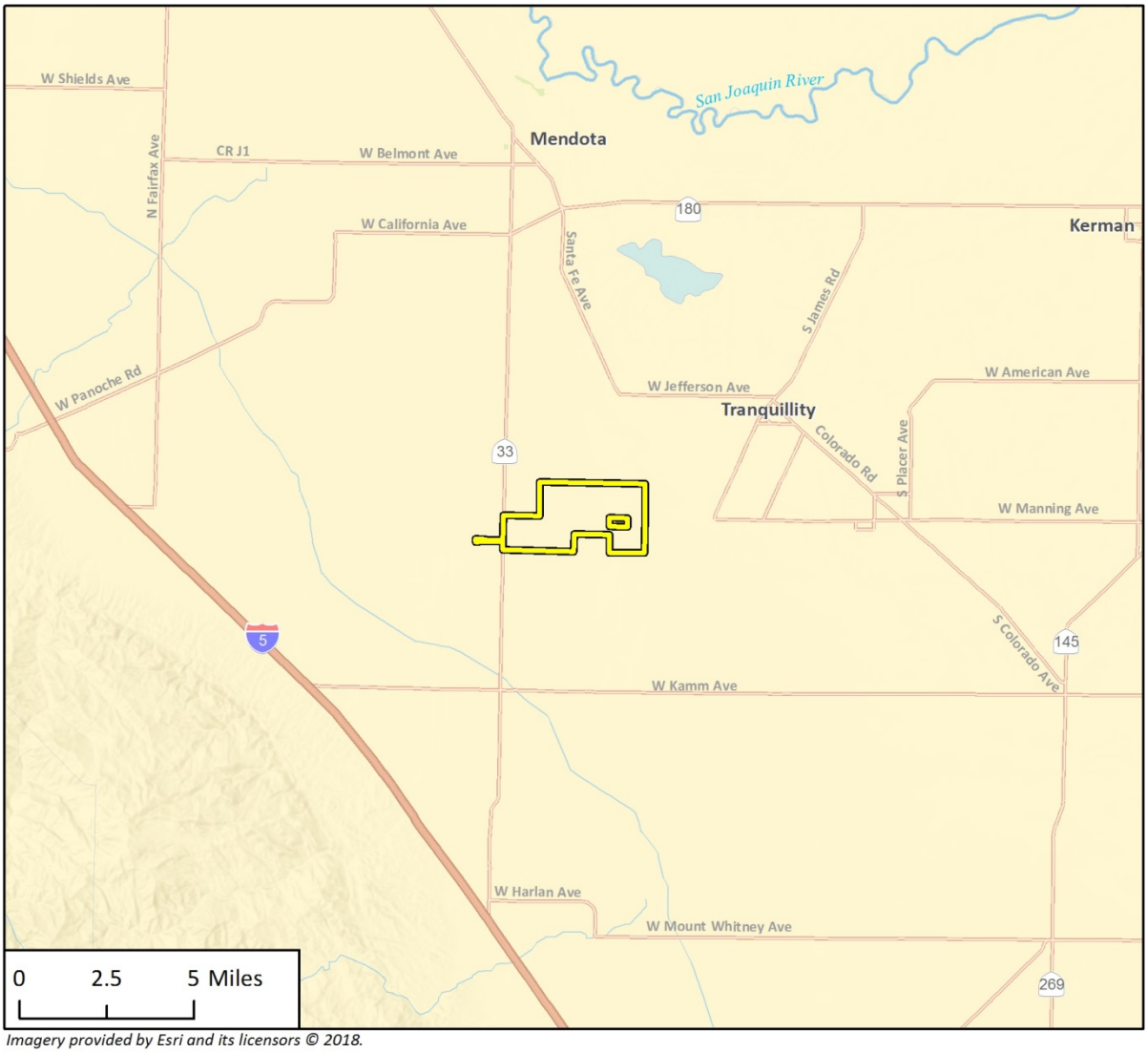
The Project would include improvements to infrastructure related to the existing Tranquillity Switching Station (Figure 2-3). Two existing overhead PG&E transmission lines are located on the north side of Dinuba Avenue, along the southern portion of the Project site (Figure 2-3). There also are existing PG&E utility lines within the site. These would remain in place with an easement granted to PG&E for access.

Approximately 76 acres of federally owned land are surrounded by the Project site but are not proposed as part of the Project. This land would not be contained within the Project security fence, and the existing legal access would be retained. It is anticipated that the existing use of this land for occasional dry farming followed by periods of fallow use would continue if the Project is approved. This land is not subject to a Williamson Act contract.

The roadways surrounding the Project site are West Dinuba Avenue and State Route (SR) 33 (Derrick Avenue), both of which are paved, as well as South San Mateo Avenue and West South Avenue, which are dirt. These roads range between 15 and 50 feet in width and provide a buffer between the Project site and the parcels to the north, west, south, and east.

[3] The project site excludes assessor parcels 028-12-033, 028-12-035, 028-12-037, and 028-12-039.
[4] The Westlands Water District acquired these properties as part of the following settlements: (1) the September 3, 2002 settlement agreement reached among the United States, Westlands Water District, and others in the Sumner Peck Ranch et al. v. Bureau of Reclamation et al. lawsuit; (2) the Britz settlement (a separate action executed on September 3, 2002); and (3) the 2002 settlement agreement reached in the Sagouspe et al. v. Westlands Water District et al. lawsuit.
[5] The Williamson Act (also known as the California Land Conservation Act of 1965) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The contracted land is then restricted to agricultural and compatible uses through a rolling-term, 10-year contract between the private land owner and the local government.

Figure 2-1 Regional Location



Imagery provided by Esri and its licensors © 2018.

Project Location

N

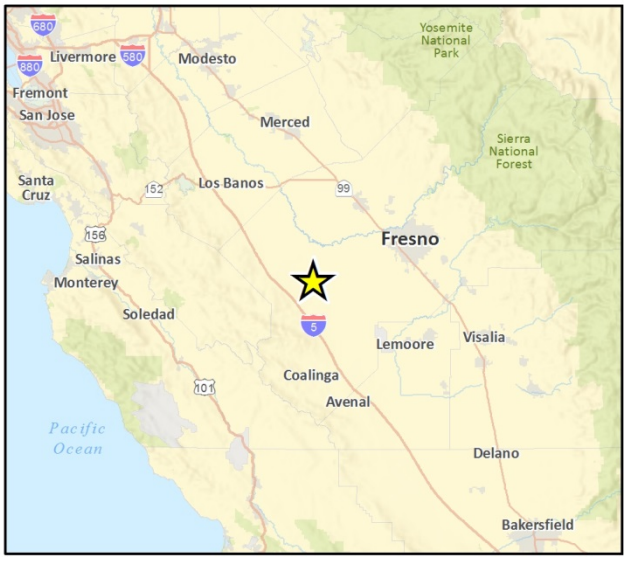


Figure 2-2 Project Site Location

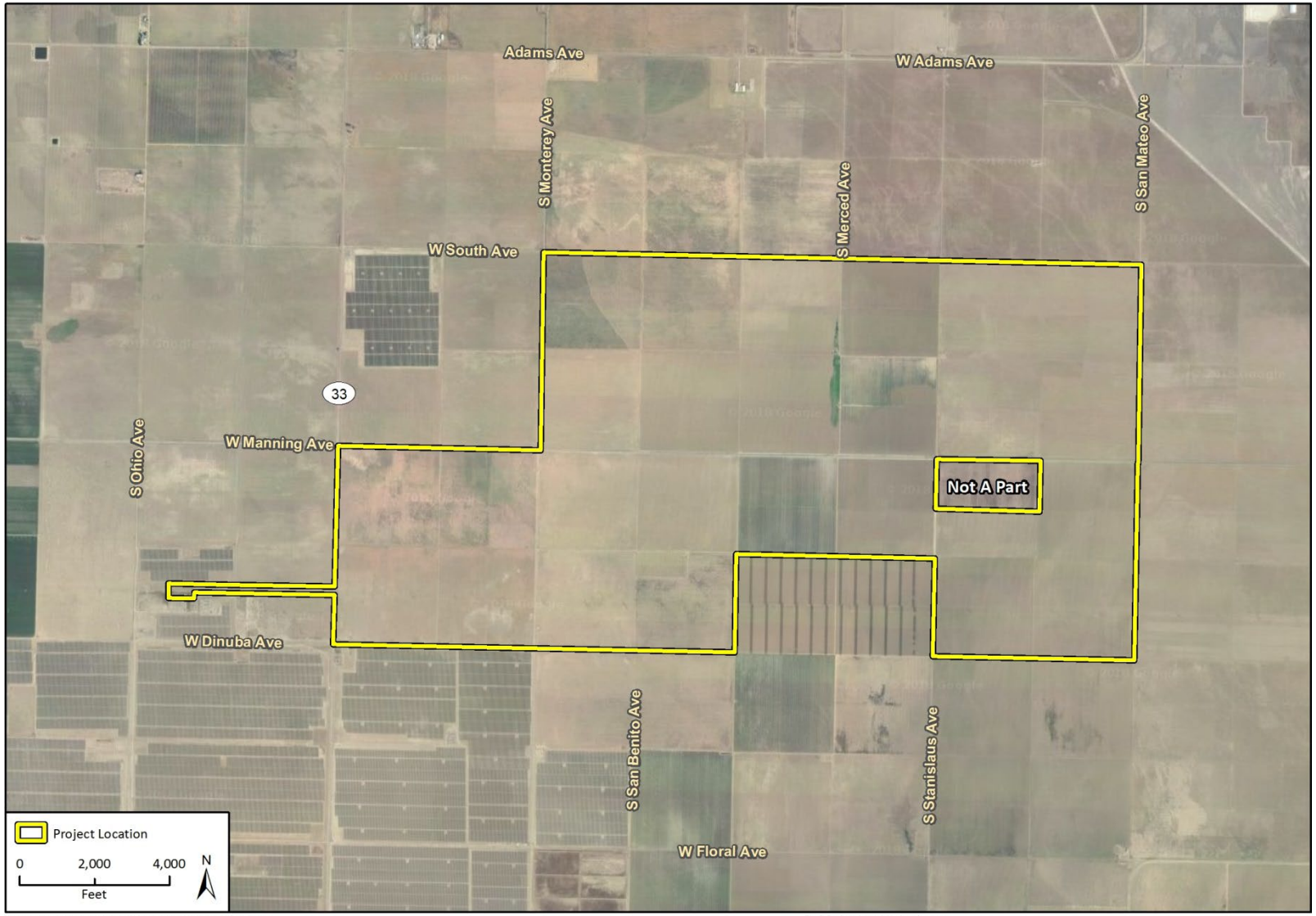
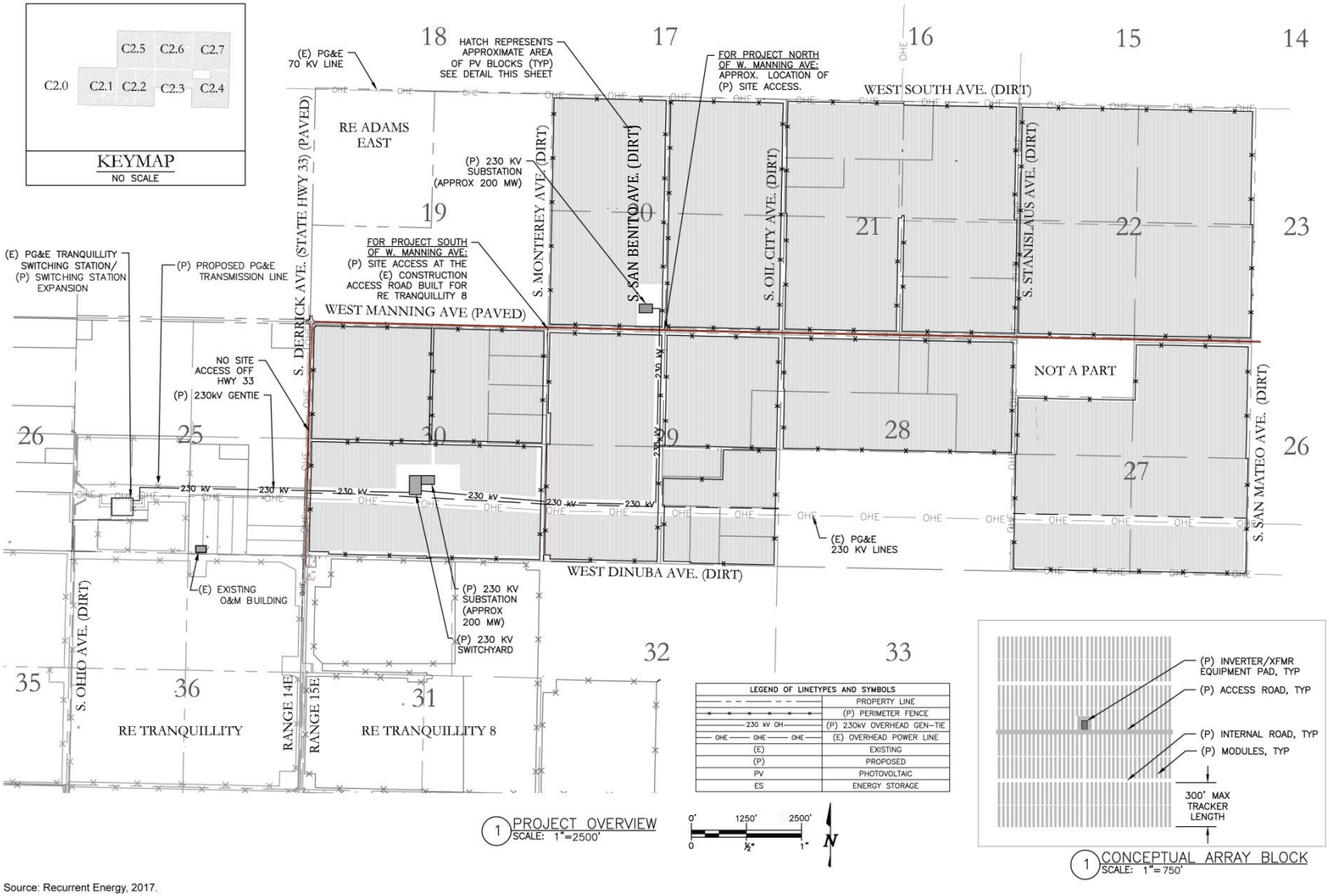


Figure 2-3 Site Plan



Source: Recurrent Energy, 2017.

2.6.2 Surrounding Land Uses

The Project site is located in unincorporated Fresno County along the western edge of San Joaquin Valley. The San Joaquin Valley extends south from the Sacramento-San Joaquin River Delta in the north to the Tehachapi Mountains in the south. The Diablo coastal mountain range forms the valley's western border while the Sierra Nevada mountain range forms the valley's border to the east. The region is dominated by agricultural uses and the topography is relatively flat with elevations rising gradually to the east, west, south, and north.

Existing land uses surrounding the Project site consist of agriculture, solar development, and two rural residences. Non-irrigated agricultural land surrounds the Project site to the north, east, and west. These lands are owned mostly by Westlands Water District, which keeps them in various states of low-value agricultural production. The Great Valley Solar Facility and two rural residences also border the Project site to the south. The Adams East Solar Facility is located approximately 0.4-mile northwest of the Project site.

2.7 Project Background

The California Renewable Portfolio Standard (RPS) legislation enacted in 2002 (Senate Bill [SB] 1078) and accelerated in 2006 required retail sellers of electricity to obtain 20 percent of their supply of electricity from renewable energy sources, such as solar, by 2010. Subsequent recommendations advocated a goal of 33 percent by 2020, which Governor Arnold Schwarzenegger set as a statewide goal when he signed Executive Order S-14-08. The following year, Executive Order S-21-09 directed the California Air Resources Board, under its Assembly Bill (AB) 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020 (California Energy Commission 2014). The 33 percent goal was enacted into law by Governor Brown on April 13, 2011 with his signing of SB 2X. The CPUC states that the state's investor-owned utilities (including PG&E, Southern California Edison, and San Diego Gas & Electric) collectively served 22.7 percent of their 2013 retail electricity sales with renewable energy sources, and that they have all exceeded the contractual requirements for reaching 33 percent by 2020 (CPUC 2016). To set a higher goal, on October 7, 2015, Governor Brown signed SB 350, known as the Clean Energy and Pollution Reduction Act of 2015, which increased California's RPS to 50 percent by 2030. In 2016, the governor signed SB 32 into law, extending AB 32 by requiring the state to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). SB 100, enacted in September 2018, provides for a goal of achieving a 50 percent renewable resources target by December 31, 2026, and achieving a 60 percent target by December 31, 2030. SB 100 also states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045.

Power generated by the Project would be delivered directly via the California Independent System Operator (CAISO) electrical transmission system pursuant to the terms of one or several power purchase agreements.

2.8 Project Objectives

The Applicant has identified the following objectives for the Project:

- Establish a solar PV power generating facility of a sufficient size and configuration to produce up to 400 MW_{ac} of electricity at the Point of Interconnection in a cost-competitive manner;
- Develop sites in proximity to existing transmission infrastructure in order to minimize environmental impacts;
- Assist California utilities in meeting their obligations under California's RPS Program to achieve 60 percent eligible renewable energy resources by the end of 2030 and zero-carbon sources by the end of 2045 in addition to meeting the 2030 greenhouse gas emissions reduction goals as required by the California Global Warming Solutions Act (Senate Bill [SB] 32);
- Assist California utilities in meeting their obligations under the CPUC's Energy Storage Framework and Design Program by providing up to 400 MW of storage capacity;
- Facilitate grid integration of intermittent and variable PV energy generation and minimize energy losses associated with transmission to off-site storage by collocating battery storage at the Project site.

2.9 Project Facilities

The Project, as defined for the purposes of CEQA analysis, would be comprised of two major components: the Solar Facility and the PG&E Improvements. The Solar Facility includes solar PV modules (or modules), support structures, electrical inverters, and intermediate voltage transformers. The Solar Facility would include two substations which would receive consolidated intermediate voltage cables from the collector system and step the voltage up to 230 kV via high voltage transformers located in the individual PV substation or shared facilities (Figure 2-3). Each substation area would include an electrical control building. Other necessary infrastructure would include one permanent operation and maintenance building, a supervisory control and data acquisition (SCADA) system, up to 400 MW of on-site battery storage, meteorological data system, telecommunications infrastructure, access roads, and security fencing. The proposed substations would tie into PG&E's high-voltage 230 kV Tranquillity Switching Station, via a new length of transmission line. The Tranquillity Switching Station connects to PG&E's two existing 230 kV transmission lines located directly adjacent to the Switching Station. The components of the proposed Project are discussed below.

2.9.1 Photovoltaic Modules and Support Structures

The Project would include an estimated two million to six million polycrystalline silicone (poly-Si) PV modules, although the precise module count would depend on the technology ultimately selected. The ultimate decision for the module types and racking systems described herein would depend on market conditions and environmental factors, including the recycling potential of the modules at the end of their useful lives.

Module mounting systems that may be installed include either fixed-tilt or tracking technology, depending on the PV modules ultimately selected. Multiple types of modules and racking systems may be installed across the site.

The PV modules would be manufactured at an offsite location and transported to the site. Modules would be arranged in strings with a maximum height of 12 feet. Module faces would be minimally reflective, dark in color, and highly absorptive of light.

Modules would be arranged on the site in solar arrays. For single-axis tracking systems, the length of each array (row) would be approximately 350 feet along the north/south axis. For fixed-tilt systems, a row would consist of multiple tables (4 modules high by 10 modules wide, depending on design), each table would be approximately 65 feet along the east/west axis, with 1 foot spacing between each table. For either system type, spacing between each row would be a minimum of 14 feet. The solar module array would generate electricity directly from sunlight, collect it to a single point at one of the Project substations, and interconnect it to PG&E's transmission and distribution system.

Structures supporting the PV modules would consist of steel piles (e.g., cylindrical pipes, H-beams, or similar), which would be driven into the soil using pneumatic techniques, such as a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. The piles typically would be spaced 10 feet apart. For a single-axis tracking system, piles typically would be installed to a reveal height of approximately 4 feet above grade, while for a fixed-tilt system the reveal height would vary based on the racking configuration specified in the final design. For single-axis tracking systems, following pile installation the associated motors, torque tubes, and drivelines (if applicable) would be placed and secured. Some designs allow for PV modules to be secured directly to the torque tubes using appropriate module clamps. For some single-axis tracking systems, and for all fixed-tilt systems, a galvanized metal racking system, which secures the PV modules to the installed foundations, would then be field-assembled and attached according to the manufacturer's guidelines.

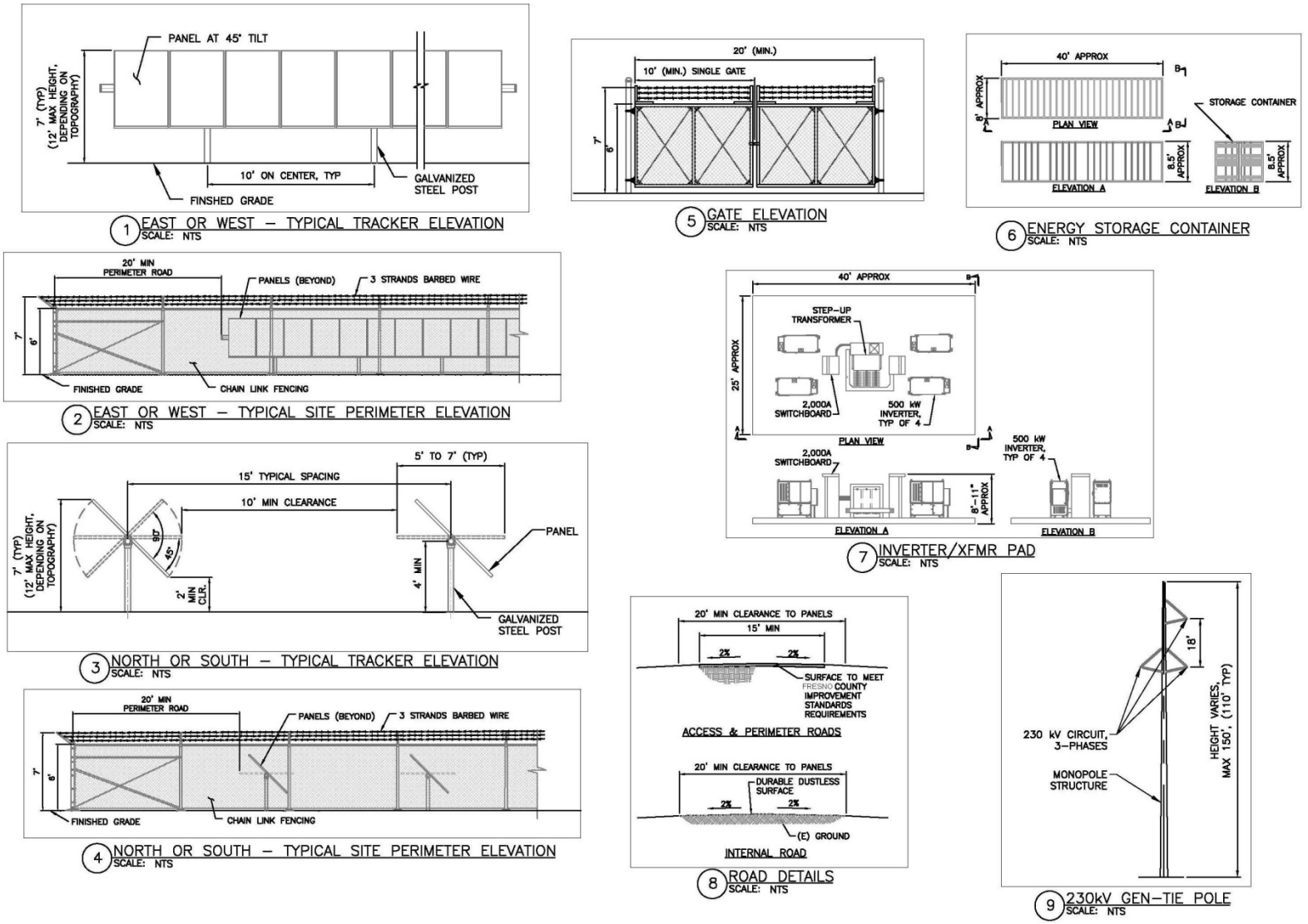
Fixed-tilt arrays would be oriented along an east-west axis with modules facing generally south. Tracking arrays would be oriented along a north-south axis with modules tracking east to west to follow the movement of the sun. The total height of the module system measured from ground surface would be up to 12 feet. Figure 2-4 shows an elevation drawing of the solar modules and tracking system. For fixed-tilt systems, the modules would be fixed at an approximate 20- to 60-degree angle or as otherwise determined necessary during final Project design.

Where excavations are required, the majority of proposed construction activities would be limited to less than 6 feet in depth, however, some excavations, such as those undertaken for the installation of collector poles and dead-end structures (see Section 2.9.2 for details), may reach depths of 20 feet or more.

2.9.2 Energy Collection: Inverters and Transformers

The Project would be designed and laid out in approximately 2 MW increments which would include a centrally located inverter-transformer station. Each inverter-transformer station would be constructed on a concrete pad or steel skid measuring approximately 40 feet by 25 feet; however, the final size would depend on available technology and market conditions. Each inverter and transformer station would contain a DC combiner (which would collect DC electrical power from the PV modules), up to four inverters, a transformer, an auxiliary power transformer, and a switchboard approximately 8 to 11 feet high (refer to the diagram in Figure 2-4). If required based on site meteorological conditions, an inverter shade structure would be installed at each pad. The shade structure would consist of wood or metal supports and a durable outdoor material shade structure (metal, vinyl, or similar). The shade structure would extend up to 10 feet above the top of the inverter pad. Inverters could be unidirectional (most common), or bidirectional, depending on whether battery charging from the grid would take place.

Figure 2-4 Tracker Elevation and Details



Source: Recurrent Energy 2017

Modules would be electrically connected into module strings using wiring secured to the module racking system. Underground cables, either rated for direct bury or installed in a polyvinyl chloride (PVC) conduit, would be installed to convey the DC electricity from the modules via combiner boxes located throughout the PV arrays, to inverters to convert the DC to AC. The output voltage of the inverters would be stepped up to 34.5 kV, the collection system voltage, via transformers located near the inverters. The power output from the inverter and transformer stations would be conveyed to the on-site substation via collection cables. The 34.5 kV collection cables would either be buried underground or installed overhead on wood poles up to 70 feet tall. Some of the wood poles could be located at the outside edge of the property line, but most of these poles are expected to be located interior to the site. Between 300 and 500 wood poles located at 250-foot intervals could be installed across the entire Project site. The typical height of the poles would be approximately 50 to 60 feet, with diameters varying from 12 to 14 inches.

2.9.3 Substations and Gen-Tie Transmission Lines

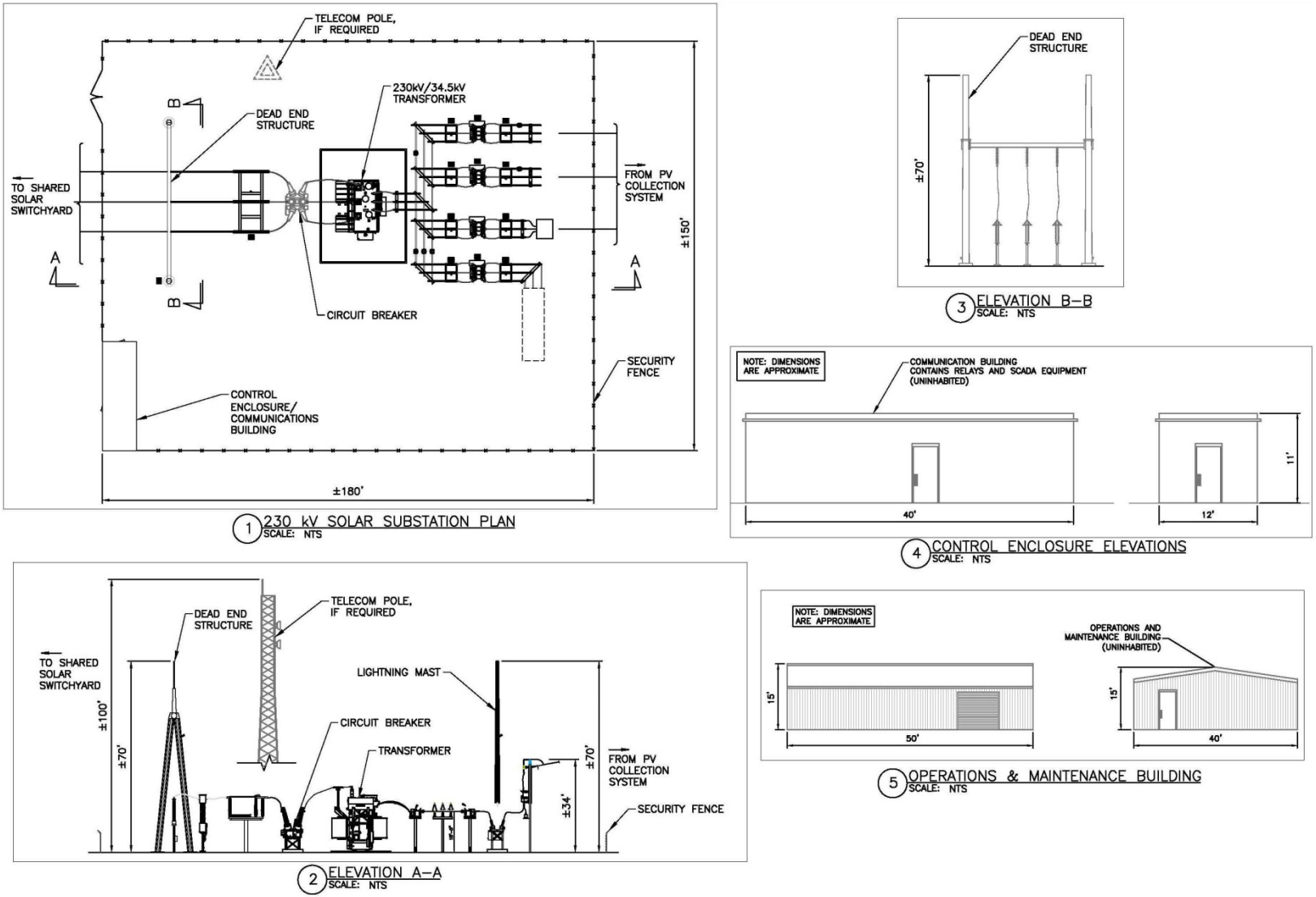
The two substations would transform voltage from 34.5 kV to 230 kV. The area of each substation and associated equipment would be approximately 27,000 square feet (150 feet by 180 feet). Figure 2-3 shows the substation locations. Each substation would collect consolidated intermediate voltage cables from the PV collector system.

Structural components in each substation area would include:

- Power transformers (approximately 25 feet by 40 feet, and 25 feet high);
- Footings for power transformers;
- Pre-fabricated control buildings (each approximately 23 feet by 15 feet, and 12 feet high) to enclose the protection and control equipment, including relays and low-voltage switchgear;
- Footings (up to 12 feet deep) for the control enclosure structure;
- Metering stand and capacitor bank(s);
- Circuit breakers and air disconnect switches;
- Telecommunications infrastructure, which may include a telecommunications tower up to 100 feet in height, or one microwave tower adjacent to the control building comprising a monopole structure up to 50 feet in height mounted with an antenna up to 5 feet in diameter;
- Dead-end structure(s) to connect substation(s) to the PG&E Tranquillity Switching Station; and
- Two equipment storage containers measuring 40 feet by 8 feet by 9 feet each also would be located at each substation area.

The substation areas would be graded and compacted to an approximately level grade. Concrete pads would be constructed on site as foundations for substation equipment, and the remaining area would be graveled to a maximum depth of approximately 6 inches. Because each of the substation transformers would contain mineral oil as an insulating fluid (see Section 2.10.4), the substations would be designed to accommodate an accidental spill of transformer fluid by the use of containment-style mounting. Each substation would be surrounded by an up-to 8-foot-high chain link fence topped with one foot of barbed wire. Each of the dead-end structures would require foundations excavated to a depth of 20 feet or more. Diagrams showing the substation plan, elevation, dead end structure elevation, and control enclosure elevations are provided in Figure 2-5.

Figure 2-5 230 kV Solar Substation Plan and Elevations



Source: Recurrent Energy 2017

Electrical transformers, switchgear, and related substation facilities would be designed and constructed to transform medium-voltage power from the Project's delivery system to the 230-kV gen-tie transmission lines (carried on either a single set of double-circuit structures or two sets of single-circuit transmission structures) connecting the Project site to the PG&E Switching Station via a new segment of transmission line (see Section 2.9.4). The switchyard, including one high-voltage 230 kV utility switchyard, telecommunications infrastructure, and two 65-foot-high dead-end structures, would be approximately 40,500 square feet in size (180 feet by 225 feet). The gen-tie structures would include tubular steel poles and H-frame structures with foundations excavated to a depth of 20 feet or more. The overhead gen-tie line would be up to approximately 3.1 miles long and consist of up to 30 structures. The structures could be up to 150 feet tall, although most would likely be no more than 110 feet.

Other electrical upgrades within the CAISO system could be triggered in part by the proposed Project in combination with other projects in the CAISO queue. In particular, it is anticipated that lower voltage power lines could require reconductoring. Reconductoring is the process of replacing a lower-capacity conductor on existing power poles. Reconductoring associated with the project would not require new ground disturbance and would typically be completed during daylight hours over the course of six weeks or less by a crew of line-working personnel.

2.9.4 PG&E Improvements

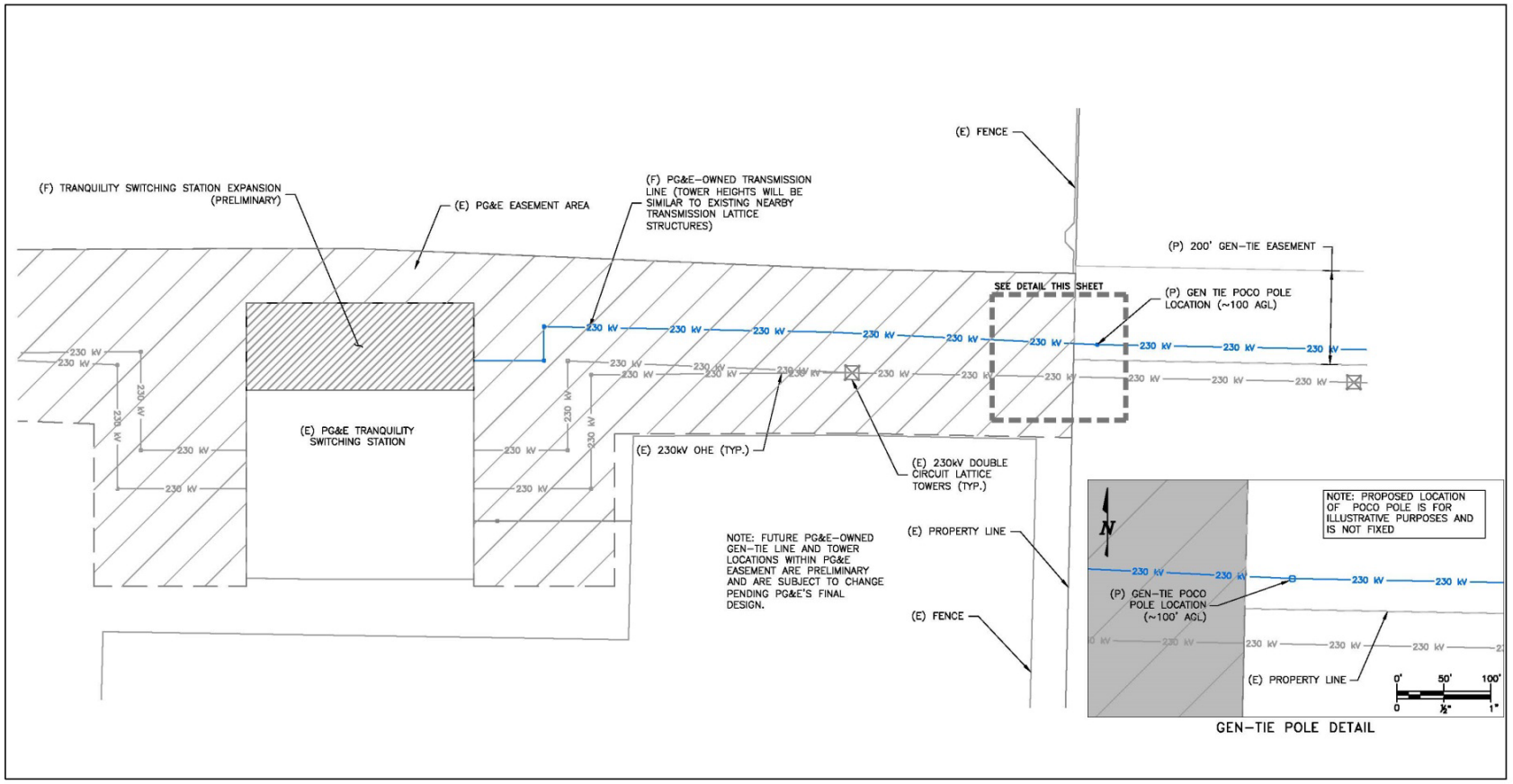
To accommodate the Solar Facility and interconnect the Project's proposed 230 kV gen-tie line to the PG&E Switching Station, PG&E would complete improvements to its electrical facilities, including expansion of the existing Tranquillity Switching Station and construction of a new 230 kV transmission line. The Tranquillity Switching Station would be expanded to the north approximately 200 feet, increasing the size of the switching station by approximately 3 acres, to accommodate the switching station's ultimate configuration. The switching station's electrical busbar (a conducting bar that carries heavy currents to supply several electric circuits) would not increase in size. The new 230 kV transmission line would extend from the Tranquillity Switching Station to a point located just east of the Great Valley Solar Project boundary (Figure 2-6). The PG&E transmission line would include approximately 1,900 feet of 230 kV conductor strung on approximately six new or existing tubular steel poles that would be approximately 140 feet high. The improvements would only serve the proposed Solar Facility.

2.9.5 Other Infrastructure

2.9.5.1 Operation and Maintenance Building

An O&M building to accommodate eight permanent operation and maintenance staff would be required for the Project. The Applicant may use an existing home/trailer that is located northwest of the intersection of West Dinuba Avenue and SR 33, and is already in use by the Applicant for the Great Valley Solar Project. If a new O&M building is constructed, it would be approximately 2,000 square feet in size (approximately 40 feet by 50 feet by 15 feet at its tallest point) and located within the Project site near the main substation. The O&M building would include permanent plumbing and restroom facilities for use by the staff, including an underground septic system and leach field. Personnel temporarily on-site to perform periodic module washing (up to 4 times per year) would be provided with portable restrooms on the Project site, as well as bottled water for drinking and hand washing. The O&M building would be constructed on concrete foundations. The building would include an operations yard for storage of operational equipment, vehicles, and

Figure 2-6 Gen-tie and Proposed Point of Change of Ownership Pole Location



materials, and would include parking and turnaround areas for staff vehicles, delivery trucks, and service vehicles. The operations yard would be between 2 and 4 acres in size, be the minimum size required to support operations, and include necessary parking per County requirements.

2.9.5.2 Septic System and Leach Field

A septic system and leach field would be installed adjacent to the O&M building to support the restroom facilities and sewage needs of the eight permanent staff working eight hours per day at the O&M building during operation.

Wastewater from the building would be discharged into the septic tank for minimum detention period of 24 hours where most of the solids would be removed (see Section 2.10.2). The 1,000-gallon septic tank would then discharge effluent to approximately 420 feet of disposal trench consisting of seven 60-foot-long trenches. The trenches would be approximately 3 feet wide, 4.5 feet deep, with 3 feet of drainrock below the drain line (equivalent to 7 square feet of absorption area per linear foot trench). The leach field would also have a 100 percent expansion area in the event that additional percolation area is necessary.

2.9.5.3 Supervisory Control and Data Acquisition System

The Solar Facility would be designed with a comprehensive SCADA system to allow remote monitoring of facility operation and/or remote control of critical components. The fiber optic or other cabling required for the monitoring system typically would be installed in buried conduit, leading to a SCADA system cabinet centrally located within the Project site or a series of appropriately located SCADA system cabinets constructed within the O&M building. The dimensions of each cabinet would be approximately 20 feet by 8 feet by 9 feet high. External telecommunications connections to the SCADA system cabinets could be provided through wireless or hard-wired connections to locally available commercial service providers. The SCADA system would interconnect to this fiber optic network at PG&E's Tranquillity Switching Station.

2.9.5.4 Energy Storage System

The Project could include, at the Applicant's option, a battery storage system capable of storing up to 400 MW of electricity and conducting energy to the regional electricity grid. If provided, the storage system would consist of battery banks housed in electrical enclosures and buried electrical conduit. The Project could use any commercially available battery technology, including but not limited to Lithium-ion (Li-ion), flow, or sodium sulfur batteries. Battery systems are operationally silent.

The energy storage system would either be dispersed throughout the Project site, connected to the PV array via direct current ("DC-coupled"); or concentrated in one location on the site, connected to the PV array via alternating current ("AC-coupled"). Whether a DC-coupled system or an AC-coupled system is chosen for installation would depend on market conditions and the availability of commercial options.

For a DC-coupled system, energy storage containers and a DC to DC converter/optimizer would be co-located at the inverter equipment areas throughout the site. These containers would include a heating, ventilation, and air conditioning (HVAC) system and monitoring, controls, and operational management systems that would maintain normal battery operation and provide alerts in the case of malfunction. A typical energy storage container would measure approximately 8.5 feet by 40 feet

by 8.5 feet high on a concrete foundation. The combined inverter and energy storage equipment area would be located on an equipment pad measuring approximately 10 feet by 90 feet.

For an AC-coupled system, the same energy storage containers with related equipment (minus the DC to DC converter/optimizer) would be grouped together in one area on the site. An AC-coupled system may alternatively use a single building to house all of the batteries and associated equipment. An AC-coupled system would occupy approximately 22 acres.

The monitoring, controls, and operational management systems would connect to the overall Solar Facility management system and use sensors to monitor the performance of the energy storage system, detect malfunctions or conditions requiring maintenance. Management systems would provide plant operators with notification of these conditions in real time. The containers would include fire suppression systems, as necessary, or be designed with physical protections such that added fire protection systems may not be necessary. Flow battery containers would include secondary containment, as necessary, for circulating fluid systems.

Energy from the storage system would be conducted to the grid through the PV system inverters in the case of a DC-coupled system, or directly to the grid from the storage system in the case of an AC-coupled system. With the use of bi-directional inverters with electricity backflow preventers, both DC-coupled and AC-coupled energy storage systems could also be charged by the electrical grid (as well as be charged by the PV modules), and therefore provide grid support.

After the operating life of the Solar Facility is complete, the energy storage system would be decommissioned along with the rest of the Solar Facility. Batteries may be disposed of as hazardous waste, or recycled, depending on available technology. Li-ion batteries and their constituent parts would likely be recycled. Li-ion batteries contain a variety of valuable metals in addition to lithium, and recycling of these batteries is expected to become increasingly commonplace with the increased use of batteries in consumer goods and electric vehicles. Some batteries may have the capacity to be reused at the end of the operating life of the Project. The chemical components of flow batteries may either be disposed of as hazardous waste (i.e., neutralization of the liquid within the battery), or they may comprise valuable elements which would also be recycled or reused.

2.9.5.5 Meteorological Data Collection System

The Project would include a meteorological (met) data collection system. Each met station would have multiple weather sensors: a pyranometer for measuring solar irradiance, a thermometer to measure air temperature, a barometric pressure sensor, and wind sensors to measure speed and direction. The 4-foot horizontal cross-arm of each met system would include the pyranometer mounted on the left side and the two wind sensors installed on a vertical mast to the right. The temperature sensor would be mounted inside the solar shield behind the main mast. Each sensor would be connected by cable to a data logger inside the enclosure next to the temperature sensor.

2.9.5.6 Access and Internal Circulation

Primary access to the portion of the Solar Facility south of West Manning Avenue would be provided from West Manning Avenue at South Monterey Avenue. Primary access to the portion of the Solar Facility north of West Manning Avenue would be provided from West Manning Avenue at the San Benito Avenue alignment (Figure 2-3). Multiple points of ingress/egress for emergency access would be provided. Primary access to the Tranquillity Switching Station would be via the existing access gates at either South Ohio Avenue or West Dinuba Avenue.

Public access and vehicle use of West Manning Avenue (paved) and unpaved roadways[6] in the Project area would not be affected by the Project. In addition, there is a California Department of Transportation (Caltrans) future right-of-way adjacent to SR 33, which would be avoided by the Project. The Project modules and electrical infrastructure would be set back from the existing SR 33 highway by a minimum of 50 feet plus additional clearance for any deed restrictions and the future right-of-way. Refer to Section 2.9.8, *Site Buffers*, for a description of the setbacks from the property lines.

The Project on-site roadway system would include a perimeter road, access roads, and internal roads. The perimeter road and main access roads would be approximately 20 to 30 feet wide and constructed to be consistent with facility maintenance requirements and Fresno County Fire Department standards. These roads would be surfaced with gravel, compacted dirt, or another commercially available surface. Internal roads would have permeable surfaces and be approximately 12 to 20 feet in width or as otherwise required by Fresno County Fire Department standards. They would be treated to create a durable, dustless surface for use during construction and operation. This would likely involve surfacing with gravel, compacted native soil, or a dust palliative and would not involve lime treatment. Temporary driveway aprons to points of ingress/egress during construction and decommissioning, such as along West Manning Avenue to South Monterey Avenue, may be up to 80 feet wide to accommodate construction traffic; however, permanent driveway aprons would be built according to Fresno County Improvement Standards. Perimeter and site access roads would have 95 percent relative compacted subgrade, and four inches of gravel or equivalent.

2.9.6 Lighting

Motion sensitive directional lights would be installed to provide security and approach lighting for the substation areas, the O&M building, each inverter-transformer station, at gates, and along perimeter fencing. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. All lighting also would conform to applicable Fresno County rules and regulations for outdoor lighting.

2.9.7 Safety and Security

The boundary of the Solar Facility would be secured by up to 8-foot-high chain-link perimeter fences, topped with three-strand barbed wire. Public access rights on roadways through the Project site and access to easements held by PG&E or other entities would not be affected by the type of project fencing. Existing public vehicle use of West Manning Avenue and other private unpaved roadways would continue through the Project site.

The Tranquillity Switching Station is currently fenced separately from the rest of the Project site, with access secured by a locked gate.

Off-site security personnel could be dispatched during nighttime hours or could be on-site, depending on security risks and operating needs. Infrared security cameras, motion detectors, and/or other similar technology would be installed to allow for monitoring of the site through review of live footage 24 hours per day, 7 days per week. Such cameras or other equipment would be placed along the perimeter of the facility and/or at the inverters.

[6] It is noted that these unpaved roads are private roads not maintained by the County.

2.9.8 Site Buffers

Per the Fresno County Solar Facility Guidelines, the Project would achieve a minimum 50-foot buffer to adjacent properties by excluding structural improvements and equipment (excluding fencing) from within 50 feet of the outside boundary of the Project site. Internal perimeter roads a minimum of 20 feet wide would be installed along the outside edges of the site between the fence and the solar modules.

2.10 Water Requirements and Waste Generation

2.10.1 Water

During the construction phase, if grading and grubbing is required, it is anticipated that a total of up to 360 acre-feet[7] of water would be used for dust suppression (including truck wheel washing) and other purposes (Recurrent Energy 2018). If grading and grubbing is not required, water needs would be less. During construction, non-potable water would be obtained from an existing private well on the Great Valley Solar Project site and/or purchased from the Westlands Water District and trucked to the site from an existing well within five miles. During construction and decommissioning, potable water for drinking and hand washing would be brought to the site by a bottled water service provider.

During the operation and maintenance phase, approximately 20-acre-feet per year of water would be required for module washing, maintenance, and the O&M building restroom facilities, equivalent to 0.05 acre-feet (or 16,250 gallons) per MW annually. Of this, approximately 1.5 acre-feet of non-potable water would be used by employees on-site for washing or rinsing equipment, hand washing, and other non-toilet uses. Approximately 14.7 acre-feet would be used for washing the modules up to four times a year (up to 3.7 acre-feet of water per washing period). The remaining estimated water would be used for other miscellaneous needs (Recurrent Energy 2018). Operational water would be trucked in from the City of Fresno or the City of Mendota. Potable water would be supplied to the O&M building by a licensed provider.

2.10.2 Wastewater

During construction, restroom facilities would be provided by portable units to be serviced by licensed providers. A septic system and leach field would be installed adjacent to the O&M building to support the restroom facilities and sewage needs during operation. Personnel on-site to perform module washing (up to four times per year) would be provided with portable restrooms serviced by a licensed provider. Anticipated peak flow is 600 gallons into the leach field per day during Project operation (or 0.67 acre-feet per year) (Recurrent Energy 2018). No surface discharges are proposed, other than natural stormwater runoff. A Waste Discharge Permit would not be required from the Regional Water Quality Control Board (RWQCB) because the Project would not exceed 2,500 gallons per day of sewage. The septic system would be required to be permitted by the Fresno County Department of Public Works and Planning. The septic system and leach field testing procedures and design would meet all applicable specifications and regulations.

[7] One acre-foot of water equals 325,851 gallons – approximately the amount needed to cover an acre (roughly a football field) of ground one foot deep.

2.10.3 Stormwater

As necessary based on preconstruction drainage analysis and local grading requirements, on-site stormwater basins would be constructed to retain runoff. Stormwater storage of 1,907,368 cubic feet would be required for the Solar Facility. Basins would be approximately 1.5 feet deep, resulting in approximately 1,271,579 square feet of storage. Stormwater basins are expected to remain dry except during or after a rain event. For the PG&E Improvements, using a standard design basin depth of 18 inches, an area of 42,108 square feet would be required to capture the projected runoff volume.

2.10.4 Hazardous Materials and Waste

Construction and decommissioning would involve the use of hazardous materials, such as fuels and greases to fuel and service construction equipment. Such substances may be stored in temporary on-site aboveground storage tanks or sheds. The fuels would be in a locked container within a fenced and secure temporary staging area. If the quantities stored are estimated to be in excess of 1,320 gallons,[8] storage would be undertaken in compliance with the Spill Prevention, Control, and Countermeasure (SPCC) Rule. However, quantities are not likely to be in excess of 1,320 gallons. In addition, if the quantities stored are estimated to be 55 gallons or 500 pounds, a Hazardous Materials Business Plan would be developed prior to construction for submission to the Fresno County Division of Environmental Health. Trucks and construction vehicles would be serviced from off-site facilities. The use, storage, transport, and disposal of hazardous materials used in construction of the facility would be carried out in accordance with federal, state, and county regulations. No extremely hazardous substances (e.g., those governed pursuant to Title 40, Part 335 of the Code of Federal Regulations) are anticipated to be produced, used, stored, transported, or disposed of as a result of project construction. Material Safety Data Sheets for all applicable materials present on-site would be made readily available to on-site personnel.

Hazardous waste and electrical waste generated during construction would not be placed in a landfill, but rather would be transported to a hazardous waste handling facility (e.g., electronic-waste recycling). All contractors and workers would be educated about waste sorting.

Operation and maintenance activities is not expected to generate hazardous waste on a recurring basis. Certain battery technologies may include materials considered hazardous. If batteries are used in the energy storage system, the batteries would likely be recycled once their useful life is completed, if technology to recycle such storage batteries exists and energy storage companies (such as Tesla) are conducting recycling at the time of disposal; however, recycling facilities are not readily available as of the date of this document. Therefore, this analysis assumes that all batteries in the storage system, which would be replaced once approximately 20 years into operation and removed at the end of Project operation (approximately 35 years), may be required to be disposed of as hazardous waste, resulting in the generation of an estimated 2,500 tons of potentially hazardous waste 20 years into the operation of the Solar Facility and again during decommissioning. Also see Section 2.9.5.4 for a discussion of battery disposal/recycling.

[8] Effective January 1, 2008 the Certified Unified Program Agencies are vested with the responsibility and authority to implement the Aboveground Petroleum Storage Act. Owners or operators of aboveground petroleum storage tanks are required to file a storage statement and implement spill prevention measures according to the Aboveground Petroleum Storage Act of 1990. Facilities with a single tank or cumulative aboveground storage capacities of 1,320 gallons or greater of petroleum are covered by this law.

2.10.5 Non-Hazardous Solid Waste

Construction of the Project would generate approximately 4,000 cubic yards of solid waste. Construction materials would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility. It is anticipated that at least 20 percent of construction waste would be recyclable, and 50 percent of those materials would be recycled (Recurrent Energy 2018). Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and spread on the Project site for weed control as appropriate. Other compostable materials, such as vegetation, might also be composted off-site. Non-hazardous construction materials that cannot be reused or recycled would be disposed of at municipal or county landfills. All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

Operation and maintenance activities would produce negligible volumes of non-hazardous solid waste. The transformers would use non-hazardous, biodegradable seed oil. Oil disposal would occur in accordance with applicable regulations. PV modules and the inverters would not produce any waste during operation.

2.11 Construction

Construction of the Project would occur over approximately 18 months, with an expected start date of late-2021.[9] Within this timeframe, construction of three project components would occur:

- Solar Facility: Construction of the Solar Facility is expected to begin late-2021 and to be completed early 2023. Phases of activities would include: 1) site preparation; 2) PV module system installation; and 3) inverters, transformers, substations, and electrical collector system installation. Site restoration and revegetation would occur immediately following major construction.
- Energy Storage System: Construction of the energy storage system is expected to begin early 2022 and be completed early 2023, overlapping with the Solar Facility. Phases would include: 1) site preparation; 2) foundations, structures, and DC electrical system installation; and 3) inverter, substation, and AC electrical system installation.
- PG&E Improvements: Construction of the PG&E Improvements is expected to begin early 2022 and last approximately six months, overlapping with the Solar Facility and energy storage system. Phases would include: 1) site work and 2) electrical work.

2.11.1 Solar Facility Phase 1: Site Preparation and Pre-Construction Activities

Pre-construction activities would comprise the activities needed to prepare the Project site for construction, including site surveying, vegetation clearance, and grading. The site would be secured with the installation of chain-link fencing and gates around the site perimeter and staging and laydown areas.

[9] The Notice of Preparation issued for this EIR noted earlier construction dates. The technical analyses prepared for the project were based on earlier construction dates beginning in 2020 and ending in 2021. The construction period, phasing, and means and methods of construction would remain the same, thus the impacts analyzed under those earlier construction dates would continue to be valid.

2.11.1.1 Staging and Other Temporary Work Areas

Construction would require temporary staging and storage areas for materials and equipment during the construction process. A staging/refueling area would be located at or near the primary access point to the project. Assuming continuous construction, one main staging area would be located near West Manning Avenue at the western end of the site. Preparation of laydown areas would include grubbing, clearing, grading, and compaction. The staging and laydown areas would be used for material and equipment storage, reporting location for workers, parking area for vehicles and equipment, and the ultimate location of the O&M building. Laydown areas would encompass up to 10 acres and would be secured with an 8-foot-high fence. Temporary power would be provided via mobile generators or local distribution lines.

2.11.1.2 Access and Internal Circulation

The Solar Facility's on-site circulation system would include a perimeter road, access roads, and internal roads, which are described in Section 2.9.5.6. Road construction would proceed as follows: the ground would be grubbed (cleared of vegetation), scarified (loosened up), moisture conditioned, compacted, and graded with a crown in the center.

2.11.1.3 Security Fencing

The Solar Facility would include perimeter fencing as described in Section 2.9.7. The perimeter of each area would be securely fenced and gated as part of site preparation prior to the installation of solar arrays to prevent unauthorized access. Fence posts would be spaced approximately 10 feet apart, drilled and grouted or driven pneumatically into the soil profile up to an estimated 5 feet deep.

2.11.1.4 Construction-Related Grading and Vegetation Management

As necessary for equipment access, the site would be grubbed and scarified. As the site is nearly flat and has been historically graded/tilled, Project-related grading would be minimal and occur only as necessary to level dips and hills. The site cut and fill would be approximately balanced, or minimal import/export would be necessary. Due to the generally level ground, no mass grading is planned or anticipated, and the existing topsoil would not be removed. During site preparation, an average of 35 acres in various portions of the site would be disturbed daily at any given time. During Phase 2 (Section 2.11.2), an average of 25 acres would undergo installation at any one time, with an estimated maximum active disturbance area of up to 90 acres when Phases 1 and 2 overlap.

2.11.1.5 Erosion and Sediment Control and Pollution Prevention

As the construction of the Project would result in disturbance of an area greater than 1 acre, the Applicant would be required to enroll under the State Construction General Permit, for the National Pollution Discharge Elimination System program. To enroll under this permit, the Applicant would prepare a single or multiple Stormwater Pollution Prevention Plans (SWPPP), which would be based on the final engineering design. The SWPPP would be prepared by a qualified engineer or erosion control specialist, and would be implemented before construction. It would include Project information and best management practices (BMP). The BMPs would include dewatering procedures, stormwater runoff quality control measures, concrete waste management, watering for dust control, and construction of perimeter silt fences, as needed. The SWPPP would be submitted to the RWQCB and Fresno County prior to issuance of any building or grading permits.

2.11.2 Solar Facility Phase 2: Photovoltaic Module System Installation

PV module installation, array assembly, and racking would occur following site preparation and pre-construction activities. The structure supporting the PV module arrays would consist of steel piles (e.g., cylindrical pipes, H-beams, or similar), which 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. The piles would typically be spaced 10 feet apart. For a single-axis tracking system, piles typically would be installed to a reveal height of approximately 4 feet above grade, while for a fixed-tilt system the reveal height would vary based on the racking configuration specified in the final design. For single-axis tracking systems, following pile installation the associated motors, torque tubes, and drivelines (if applicable) would be placed and secured. Some designs allow for PV modules to be secured directly to the torque tubes using appropriate module clamps. For some single-axis tracking systems and for all fixed-tilt systems, a galvanized metal racking system, which secures the PV modules to the installed foundations, would then be field-assembled and attached according to the manufacturer's guidelines.

Ancillary facilities such as the O&M building, septic system and leach field, exterior lighting, SCADA, and meteorological data collection system may also be installed with the solar arrays.

2.11.3 Solar Facility Phase 3: Installation of Inverters, Transformers, Substations, and Electrical Collector System

2.11.3.1 Energy Collection

Underground cables to connect module strings would be installed using ordinary trenching techniques, which typically include a rubber-tired backhoe excavator or trencher. Wire depths would be in accordance with local, State, and Federal requirements, and would likely be buried at a minimum of 18 inches below grade, by excavating a trench approximately 3 to 6 feet wide to accommodate the conduits or direct buried cables. After excavation, cable rated for direct burial or cables installed inside a polyvinyl chloride (PVC) conduit would be installed in the trench, and the excavated soil would likely be used to fill the trench and lightly compressed. All cabling excavations would be to a maximum depth of 10 feet.

2.11.3.2 Inverters and Transformers

All electrical inverters and the transformer would be placed on concrete foundation structures or steel skids. In lieu of steel skids or pre-cast concrete foundations, foundations for the transformer and inverter locations would be formed with plywood and reinforced with structural rebar. Commissioning of equipment would include testing, calibration of equipment, and troubleshooting. The substation equipment, inverters, collector system, and PV array systems would be tested prior to commencement of commercial operations. Upon completion of successful testing, the equipment would be energized.

2.11.3.3 Substations

The substation areas would be excavated for the transformer equipment and control building foundation and oil containment area. The area for the substations would be graded and compacted to an approximately level grade. Substation foundations would be formed with plywood and

reinforced with structural rebar. Concrete pads would be constructed as foundations for substation equipment, and the remaining area would be graveled. Concrete for foundations would be brought on-site from a batching plant in Fresno County.

Phases 1, 2, and 3 of construction of the Solar Facility would result in approximately 175.1 acres of new impervious surfaces on the Project site. This acreage does not include the impervious surface that would be constructed for the PG&E Improvements. As discussed in Section 2.11.5, the PG&E Improvements would result in an additional approximately 2.9 acres of impervious surface.

2.11.4 Energy Storage System

The energy storage system, including battery enclosures and electrical cabling, would be installed at the Project site, concurrently with the Solar Facility or at a later date. After clearing and grading the site for the battery storage system, underground electrical conduit and cable, including the grounding grid, would be installed. Concrete pad foundations for the containers or building(s) would be poured, and battery containers or building(s) would be installed on top of the foundations. The system would be largely assembled off-site and transported to the Project site for installation. The inverters and transformers would be connected electrically to complete the system.

2.11.5 PG&E Improvements

Construction of the PG&E Improvements would take place in two phases: Phase 1, Site Work, which would take place over approximately three months, and Phase 2, Electrical Work, which would take place over approximately six months.

Phase 1 construction would begin with vegetation removal and grading, and installation of foundations and underground conduit and wiring. Concrete would be brought on-site from a batching plant in Fresno. Concrete pads would be constructed as foundations for switching station equipment, and the remaining area within the PG&E Improvements footprint would be graveled. Concrete would also be used during Phase 2 construction for tubular steel pole foundations, which would be excavated to a depth of 20 feet or more. Cranes would be used for installation of the tubular steel poles, and bucket trucks (or similar vehicles) would be used for wire stringing (installation of electrical conductors and associated hardware and equipment on the tubular steel poles).

After assembly, the switching station equipment and new transmission line would be tested and commissioned. These activities would be undertaken using similar methods to those described previously for the Solar Facility.

Total impervious surface that would be constructed for the PG&E Improvements would be approximately 2.9 acres.

2.11.6 Construction Site Restoration and Revegetation

Following the completion of major construction, the Project site would be re-seeded/re-vegetated with low-growing plant species appropriate for maintaining soil quality and controlling weed growth to reduce fire hazards. Vegetation would be selected based on growth habit (lower growing cover would be preferred) and suitability for the area. Site restoration activities would include:

- On-site repurposing or removal of all vegetative material from grubbing, clearing, and pruning;
- Removal of all trash and construction debris;

- Removal of temporary construction fencing marking the perimeter of sensitive areas (washes, set-aside areas, cultural area); and
- Removal of all construction equipment and any supplies and materials that were not consumed on-site.

2.11.7 Construction Schedule and Workforce

Construction equipment would operate between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday for up to a maximum of 8 hours per piece of equipment, daily. Weekend construction work is not expected to be required, but may occur on occasion, depending on schedule considerations. All construction work, including any weekend work, would be required to comply with the Fresno County Municipal Code Chapter 8.4 Noise Control.

During construction, the number of workers onsite would vary, as would the type of equipment and vehicles that would operate on the project site. Table 2-1 provides a summary of the average and maximum number of workers anticipated by construction phase.

Construction phases for the proposed project are expected to overlap, and the number of construction workers onsite is expected to range between 132 and 701 workers per day, with a maximum of 974 workers per day occurring for one month when Phases 1 and 2 of the Solar Facility, Phase 1 of the energy storage system, and the PG&E Improvements overlap. The majority of the labor force is expected to be from Fresno and the surrounding communities with an average round-trip commute of 100 miles (Recurrent Energy 2018).

Table 2-1 Construction Phasing and Construction Employment

Construction Element	Construction Phase		
	Average Number of Workers	Maximum Number of Workers	Length of Phase (work days)
Solar Facility			
Site Preparation	309	412	81
Photovoltaic Module System Installation	576	678	282
Inverters, Transformers, Substations, and Electrical Collector System Installation	105	140	121
Energy Storage System			
Site Preparation	74	98	22
Foundations, Structures, and DC Electrical System[1] Installation	63	84	174
Inverter, Substation, and AC Electrical System Installation	54	71	146
PG&E Improvements			
Site Work	15	23	63
Electrical Work	15	23	126

[1] DC Electrical System employees include electricians installing battery racks and modules, not running equipment.

2.11.8 Construction Access, Equipment, and Traffic

All materials for the Project's construction would be delivered by truck. The majority of truck traffic would occur on designated truck routes and major streets. Flatbed trailers and trucks would be used to transport construction equipment and construction materials to the site. Project components would be assembled on-site.

2.11.8.1 Solar Facility

The anticipated number of vehicle trips per day for each construction phase is as follows (Recurrent Energy, Construction Estimating Division 2018):

- **Phase 1: Site Preparation**
  - An average of 232 daily worker round trips with an average travel distance of 100 miles to and from the Project site from the City of Fresno area (assuming 25 percent of workers carpool).
  - Approximately 8,564 total trips (4,282 round trips) by water tankers of 10,000 gallons each. Each roundtrip would be less than 10 miles total (5 miles each way).
- **Phase 2: PV Module System Installation**
  - An average of 432 daily worker round trips with an average travel distance of 100 miles to and from the Project site from the City of Fresno area (assuming 25 percent of workers carpool).
  - Approximately 4,282 total trips (2,141 round trips) by water tankers of 10,000 gallons each. Each roundtrip would be less than 10 miles total (5 miles each way).
- **Phase 3: Inverters, Transformers, Substations, and Electrical Collector System Installation**
  - An average of 79 average daily worker round trips with an average travel distance of 100 miles to the Project site from the City of Fresno area (assuming 25 percent of workers carpool).
  - Approximately 4,282 total trips (2,141 round trips) by water tankers of 10,000 gallons each. Each roundtrip would be less than 10 miles total (5 miles each way).

Equipment and vehicles to be used for the construction of the Solar Facility are identified in Table 2-2.

Table 2-2 Solar Facility On-site Construction Equipment and Vehicle Use

On-site Equipment[1]	Estimated Usage		
	Units	Hours/Day	Total Days Per Unit
Phase 1: Site Preparation			
Pickup	12	4	78
Bulldozers	82	7	80
Water Trucks	53	4	80
Graders	2	7	64
Flatbeds	23	4	72
Skid Steers	2	7	12
Front End Loaders	4	7	32
Roller Compactor	5	7	70
Backhoes	4	7	16
Instrument	12	7	78
Gravel Trucks	127	4	80
Phase 2: Photovoltaic Module System Installation			
Water Trucks	8	4	280
Flatbeds	62	4	282
Skid Steers	10	7	140
Pile Drivers	7	4	7
Forklifts	18	4	4
Trenchers	12	4	105
Phase 3: Installation of Inverters, Transformers, Substations, and Electrical Collector System			
Bulldozers	1	7	4
Water Trucks	18	4	120
Grader	1	7	4
Flatbed Truck	1	4	4
Skid Steers	3	7	62
Front End Loader	1	7	4
Roller Compactor	1	7	4
Pile Drivers	3	7	62
Trenchers	10	4	95
Backhoes	3	7	121
Cranes	6	4	91
Aerial Lifts	8	4	78
Concrete Trucks	21	4	1

[1] Off-site truck trips are discussed in Section 2.11.8.1.

2.11.8.2 Energy Storage System

The anticipated maximum number of vehicle trips per day for each construction phase of the energy storage system is as follows (Recurrent Energy, Construction Estimating Division 2018):

- **Phase 1: Site Preparation**
  - An average of 56 daily worker round trips with an average travel distance of 100 miles to and from the Project site from the City of Fresno area (assuming 25 percent of workers carpool).
  - Approximately 3,167 total trips (1,584 round trips) by water tankers of 10,000 gallons each. Each roundtrip would be less than 10 miles total (5 miles each way).
- Phase 2: Foundations, Structures, and DC Electrical System Installation
  - An average of 48 daily worker round trips with an average travel distance of 100 miles to and from the Project site from the City of Fresno area (assuming 25 percent of workers carpool).
  - Approximately 1,584 total trips (792 round trips) by water tankers of 10,000 gallons each. Each roundtrip would be less than 10 miles total (5 miles each way).
- **Phase 3: Inverter, Substation, and AC Electrical System Installation**
  - An average of 41 daily worker round trips with an average travel distance of 100 miles to and from the Project site from the City of Fresno area (assuming 25 percent of workers carpool).
  - Approximately 1,584 total trips (792 round trips) by water tankers of 10,000 gallons each. Each roundtrip would be less than 10 miles total (5 miles each way).

Table 2-3 shows equipment and vehicles to be used for the construction of the energy storage system.

Table 2-3 Energy Storage System On-site Construction Equipment and Vehicle Use

	Estimated Usage		
On-site Equipment	**Units**	**Hours/Day**	**Total Days Per Unit**
Phase 1: Site Preparation			
Pickup	8	4	22
Bulldozers	12	7	22
Water Trucks	72	4	22
Graders	6	7	21
Flatbeds	4	4	18
Skid Steers	1	7	12
Front End Loaders	4	7	20
Roller Compactor	5	7	20
Instrument	8	7	22
Gravel Trucks	104	4	22
Phase 2: Foundations, Structures and DC Electrical System Installation			
Pickup	5	4	102
Water Trucks	8	4	102
Skid Steers	4	7	102
Trenchers	3	4	74
Crane	5	4	170
Phase 3: Inverter, Substation and AC Electrical System Installation			
Water Trucks	6	4	146
Skid Steer	2	7	64
Pile Drivers	2	7	64
Trenchers	7	4	146
Backhoes	3	7	47
Cranes	4	4	121
Aerial Lifts	3	4	70
Concrete Trucks	3	4	1

2.11.8.3 PG&E Improvements

The PG&E Improvements would be accessed for construction work via South Ohio Avenue or West Dinuba Avenue. The transmission line would be constructed within an existing PG&E easement that extends east of the Switching Station, as shown on Figure 2-6.

All materials for the PG&E Improvements would be delivered by truck. The majority of truck traffic would occur on designated truck routes and major streets. Flatbed trailers and trucks would be used to transport construction equipment and construction materials to the site. Project components would be assembled on-site. Traffic resulting from construction activities would be temporary and could occur along area roadways as workers and materials are transported to and from the Project site. An average of 15 daily worker round trips with an average travel distance of 100 miles to and from the Project site from the City of Fresno area (assuming 25 percent of workers carpool). Materials deliveries during construction would travel approximately 115 miles one way from their source to the Project site.

Equipment to be used for the construction of the PG&E Improvements are identified in Table 2-4.

Table 2-4 PG&E Improvements On-site Construction Equipment and Vehicle Use

	Estimated Usage		
On-site Equipment	**Units**	**Hours/Day**	**Total Days Per Unit**
Switching Station Expansion			
Cranes	1	8	4
Excavators	1	8	15
Forklifts	1	8	30
Generator Sets	1	8	20
Water trucks	1	8	20
Surface equipment/paver	1	8	15
Graders	1	8	20
Rollers	1	8	2
Scrapers	1	8	7
Concrete Truck	1	4	1
Transmission Line Construction			
Crew-cab Truck	1	8	25
Line Truck with Worker-Lift Attachment	1	8	25
Line Truck with Auger Attachment	1	8	25
Wire Reel Attached to Line Truck	1	8	25
Puller Attached to Line Truck	1	8	25
Tensioner Attached to Line Truck	1	8	25
Concrete Truck	1	4	1

2.11.9 Construction Personnel Training

2.11.9.1 Biological Resources

Prior to construction, a qualified biologist would be retained by the Applicant to conduct environmental awareness training for Project personnel. Such training would communicate information related to the protection of sensitive biological resources that might be present at the Project site, and would include:

- A description of species of concern and associated habitats.
- The general provisions of applicable environmental regulations and the need to adhere to the provisions of the regulations.
- General measures being implemented to conserve the species of concern as they relate to the Project.

The training would include a discussion of the defined access routes to the Project site and Project site boundaries within which Project activities must be accomplished. Construction employees would strictly limit their activities, vehicles, equipment, and construction materials to the Project footprint and designated staging areas and routes of travel. The construction areas would be the minimal area necessary to complete the Project and would be specified in the construction plans.

Construction areas would be demarcated on-site, and employees would be instructed to limit activities to these areas.

2.11.9.2 Fire Suppression and Safety Training

The Applicant would coordinate with the California Office of the State Fire Marshall and the Fresno County Fire Department to provide training for personnel to safely interrupt electrical power in the event of emergency incidents requiring fire suppression or rescue activities.

To minimize fire risk, combustible vegetation or agricultural products on and around the Project site boundary would be actively managed by the Project owner or its affiliates. Combustible vegetation would either be limited in height or removed. In addition, fire breaks—in the form of 20-foot-wide roads—would be constructed around the Project boundary.

The Applicant would coordinate with the Fresno County Fire District in the development of a Fire Prevention and Emergency Action Plan for the site to address potential exposure to fire and other hazards in the Project site. The plan would include at least the following provisions:

- **Fire Prevention Training**: The Applicant would provide training for fire personnel in the safe interruption of electrical power for emergency incidents requiring fire suppression or rescue activities.
- **Emergency Action Training:** The Applicant would train all construction and operation and maintenance personnel in:
  - Evacuation routes from the Project site to safe areas, in the event of fire or other natural hazards.
  - Coordination with local fire department, sheriff department, and emergency medical services.
  - Safety measures in accordance with the California Occupational Safety and Health Administration (Cal/OSHA) regulations and guidance for construction, which would be reviewed by all Project construction staff prior to starting work. Safety measures would include those that address potential electrical incidents and fire hazards.
- **Fire Prevention Measures:** The Applicant would implement the following measures during Project construction and operation:
  - All applicable Fresno County improvement standards would be followed, to ensure accessibility and ground clearance of emergency vehicles (e.g., fire engines);
  - Vegetation would be maintained to reduce potential fire hazards at the Project site;
  - Smoking would be prohibited at the Project site, except within designated areas;
  - Work crews would be required to park vehicles away from flammable vegetation such as dry grass and brush. At the end of each workday, heavy equipment would be required to be parked over mineral soil, asphalt, or concrete, where available, to reduce the risk of fire; and
  - Fire-suppression equipment (e.g., fire extinguishers) would be made available on the Project site at all times. All heavy equipment would be required to include mechanisms for fire suppression, including spark arresters or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers.

2.12 Operation and Maintenance

Upon commissioning, the Project would enter the operation phase. The solar modules at the site would operate during daylight 7 days per week, 365 days per year. Operational activities at the Project site would include: solar module washing; vegetation, weed, and pest management; security; responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics; and communicating with customers, transmission system operators, and other entities involved in facility operations.

2.12.1 Operation and Maintenance Workforce and Equipment

Up to eight permanent staff could be on the site at any one time for ongoing facility maintenance and repairs. On intermittent occasions, up to 25 workers could be required on-site if repairs or replacement of equipment were needed in addition to module washing. The duration of scheduled maintenance activities would vary in accordance with the required task, but could involve up to 40 workers full-time for up to two weeks up to four times per year for module washing, and a similar number and duration for workers regularly visiting the site for routine maintenance activities. The maximum number of staff on-site at any time would be 48 (40 temporary staff and 8 permanent staff). The majority of the operational labor force is expected to be from Fresno and the surrounding communities with an average anticipated commute of 50 miles one way.

2.12.2 Automated Facility Control and Monitoring System

The Project would be designed with a comprehensive SCADA system to allow remote monitoring of facility operation and/or remote control of critical components. Infrared security cameras, motion detectors, and/or other similar technology also would be installed to allow for monitoring of the site through review of live footage 24 hours per day, 7 days per week. Facility operators would have a maintenance program that would include an industry standard SCADA. The operators would be on call to respond to alerts generated by the monitoring equipment at the Project site and would analyze collected data on an ongoing basis to schedule maintenance. The operators or their representatives would continually monitor facility outputs and performance against forecast production to identify equipment failure or abnormalities.

2.12.3 Site Maintenance

The Project site maintenance program would be largely conducted on-site during daytime hours. Equipment repairs could take place in the early morning or evening when the plant would be producing the least amount of energy. Key program elements would include maintenance activities originating from the on-site operation and maintenance facilities and/or a regional operation and maintenance facility located within Fresno County, and on-site maintenance as required to clear weeds for ground-mount systems. Maintenance typically would include module repairs; module washing; maintenance of transformers, inverters, and other electrical equipment as needed; maintenance of the oil/water separator system; and road and fence repairs. Visual inspections of the transformers and the oil/water separator system would be conducted monthly. Pest and weed management also would be performed in accordance with the Pest and Weed Management Plan. On-site vegetation would be managed to ensure access to all areas of the site and to screen Project elements as needed. Solar modules would be washed up to four times each year using light utility vehicles with tow-behind water trailers, as needed to maintain optimal electricity production. No chemical cleaners would be used for module washing.

As part of ongoing operation and maintenance, the energy storage system would be inspected once a year at minimum. Regular preventative maintenance would include checking security of DC and AC connections, replacement of fans, filters, and pumps as required or recommended, fire suppression system inspection as required, and validating measurements of key electrical and environmental sensors.

2.12.4 Operation Equipment

Table 2-5 identifies equipment that would be used during operation and maintenance of the Solar Facility. Quantities for equipment and traffic represent the conservative assumption of operation of the entire 400 MW_{ac} at the Point of Interconnection simultaneously; should fewer units be constructed, these quantities would be reduced proportionate to the number of MW actually in operation.

Table 2-5 Solar Facility Operation and Maintenance Equipment and Estimated Annual Usage

	Estimated Usage			
On-site Equipment	**Units**	**Hours/Day**	**Days/Week**	**Total Days**
All-Terrain Vehicles (ATVs)	4	4	5	5
Kubota Tractors	4	8	5	100
Honda Portable Generators	4	8	5	60
Portable Water Trailers with Pump	10	8	5	80
	Units	**Miles/Round Trip**	**Round Trips/Day**	**Total Days**
Ford F150s (Routine O&M)	8	30	1	130
Ford F150s (Water Wash Trucks)	15	40	1	80

2.12.5 PG&E Improvements Operation and Maintenance

The PG&E Improvements would operate continuously once fully energized, and would remain operational for the duration of the operational life of the Project (up to 35 years). Switching station maintenance (including routine inspections) would occur on a regular basis in accordance with PG&E's maintenance program within the service area. The transmission line would be maintained and repaired as needed under the direction of or by PG&E personnel consistent with CPUC regulations. Equipment damaged by vandalism would be replaced, and vegetation management would be performed periodically. Operation and maintenance of the PG&E Improvements would not require additional staff.

2.12.6 Fire Suppression and Safety Training

The fire suppression and safety training that would occur during the operation and maintenance phase of the Project would be similar to that described for the construction phase under Section 2.11.9.2. Personnel training would occur annually and for every new employee.

Fire suppression activities during operation and maintenance of the Project would include actively managing combustible vegetation and agricultural products on and around the Project site boundary. Combustible vegetation would be limited in height or removed. The Applicant would also implement the Project-specific Fire Prevention and Emergency Action Plan to address potential exposure to fire and other hazards during Project operation and maintenance. The Plan would

include Project operational procedures for fire prevention and emergency access, such as parking vehicles and storing equipment in designated areas away from vegetation, provision that fire-suppression equipment (e.g., fire extinguishers) be made available on the Project site at all times, and requirements that heavy equipment include mechanisms for fire suppression (e.g., spark arresters or turbo-charging).

2.13 Decommissioning and Site Reclamation

2.13.1 Decommissioning of Equipment

The Project is anticipated to have an operating life of up to 35 years. After this period, the facility would be decommissioned. Project decommissioning would occur in accordance with the expiration of Unclassified CUP No. 3555 and would involve the removal of all above-grade facilities, buried electrical conduit, and all concrete foundations in accordance with a Reclamation Plan. Utility-owned infrastructure would not be removed at the time the Project is decommissioned. In the event that a structure breaks off 4 feet or more beneath the ground surface, the remaining section would be left in place. If the structure breaks off in the upper 4-foot portion of soil, it would be excavated and removed. Equipment would be repurposed off-site, recycled, or disposed of in a landfill as appropriate. Decommissioning would involve the use of heavy equipment and personnel similar to that used for construction.

For the entire Project site, decommissioning activities would take up to 24 months. Decommissioning may occur simultaneously or individually as parts of the Solar Facility go offline. Appropriate hazardous materials control and erosion control measures would be used throughout the decommissioning process. It is anticipated that such controls would be substantially similar to those implemented during construction.

Decommissioning activities would involve exposure and disturbance of soils; therefore, measures for erosion and sediment control would be implemented in accordance with a separate SWPPP that would be required.

2.13.2 Site Reclamation

A Reclamation Plan containing details regarding site reclamation and decommissioning would be submitted by the Applicant to Fresno County. All road and other areas compacted during original construction or by equipment used for decommissioning would be tilled in a manner adequate to restore the sub-grade material to the proper density and depth consistent with adjacent properties. Low areas would be filled with clean, compatible sub-grade material. After proper sub-grade depth is established, locally sourced (from the City of Fresno or other location within 50 miles of the Project site) topsoil would be placed to a depth and density consistent with adjacent properties. Locally sourced compost would be applied to the topsoil, and the entire site would be tilled to further loosen the soil and blend in the compost. An appropriate seed mixture would be broadcast or drilled across the site and weed-free mulch would be applied to stabilize the soil and retain moisture for seedling germination and establishment.

2.14 Other Required Permits and Commitments

The Project requires the certification of this EIR and the following approvals from Fresno County.

- **Unclassified Conditional Use Permit** – The Project would require an Unclassified Conditional Use Permit (CUP) from Fresno County to allow for use of the Project site for a solar facility.
- **Encroachment Permit** – An Encroachment Permit would be required for any improvements in the County right-of-way prior to commencement of construction.
- **Parcel Map and Other County Approvals** – The Project may result in the modification of the existing parcels to create new parcels. This is anticipated to be addressed by Fresno County via a Parcel Map Waiver and would not require an amendment to the County's General Plan. The Applicant would prepare a parcel map application or lot line adjustment request and submit to the Fresno County Public Works and Planning Department for the creation of these parcel(s).
- **Site Plan Review** – Site Plan review and approval would be required by Fresno County prior to the issuance of Building and Grading Permits.
- **Building and Grading Permits** – Fresno County Building and Grading Permits would be required for the erection, demolition, or conversion of any building or structure. Such permits are ministerial and would be secured prior to the commencement of construction.
- **Pest and Weed Management Plan** – A Pest and Weed Management Plan detailing methods of exotic weed, rodent, nuisance arthropod, and vector control during operation and after decommissioning of the Project has been prepared by the Applicant and would be submitted to the County. Among other things, the plan would include vegetation management to discourage the harboring of rodents on-site and prevent impacts on surrounding agricultural operations. The growth of on-site vegetation would be controlled either by periodic mowing or herbicide use, as appropriate. All herbicides would be applied by (or under the oversight of) an applicator licensed to apply pesticides in California. Herbicides would be applied in accordance with the label instructions only for their intended use. Applicators would wear all required personal protective equipment.

In addition, the following discretionary approvals from other agencies may be required for the project:

- **California Regional Water Quality Control Board** – A National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit would be required for the Project. Construction activities disturbing one acre or more of land are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (Construction General Permit) and must apply for Construction General Permit coverage.
- **San Joaquin Valley Air Pollution Control District** – District approval of Indirect Source Review, stationary and/or mobile sources may be required. As discussed in Section 4.3, *Air Quality*, prior to issuance of construction permits for the Solar Facility, the Applicant would provide evidence to the County of a fully-executed Voluntary Emission Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District if required to reduce nitrogen oxides (NO_x), particulate matter 10 microns or less in diameter (PM_{10}), and particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) emissions.

- **California Department of Transportation** – An Oversize/Overweight permit and Traffic Control Plan would be required for the transportation of substation transformers. An encroachment permit would be required for overhead lines crossing SR 33.
- **California Department of Fish and Wildlife** – Authorization may be required if the proposed activities could result in "take" as defined in the California Endangered Species Act (Fish and Game Code Section 2050 et seq.).
- **United States Fish and Wildlife Service** – Consultation/authorization may be required if the proposed activities could result in "take" as defined in the Federal Endangered Species Act.
- **California Public Utilities Commission** – The CPUC has sole jurisdiction over the PG&E facilities and are subject to General Order 131-D permitting/licensing requirements. PG&E would file the appropriate documents required for the project with the CPUC in order to comply with the General Order.

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3 Environmental Setting

This section provides a general overview of the environmental setting for the Project. More detailed descriptions of the environmental setting for each environmental issue area are included in Sections 4.1 through 4.15.

3.1 Regional Setting

The Project site is in western, unincorporated Fresno County in the San Joaquin Valley, which extends south from the Sacramento-San Joaquin River Delta in the north to the Tehachapi Mountains in the south. The Diablo coastal mountain range forms the valley's western border, and the Sierra Nevada mountain range forms the valley's border to the east. The region is dominated by agricultural uses and the topography is relatively flat. The topographic characteristics of the Project site and surrounding region allow for open, expansive views of the distant hills and mountains around the valley. The valley is a low-elevation flatland that has been altered to support the growth and harvest of agriculture.

Although air quality in the area has improved in recent years, Fresno County remains a nonattainment area for ozone (urban smog) and particulate matter.

3.2 Project Site Setting

The Project site is located in western Fresno County, approximately 3.5 miles west-southwest of the community of Tranquillity and approximately 6.5 miles east of I-5. Roadways surrounding the Project site are West Dinuba Avenue and SR 33 (West Derrick Avenue), both of which are paved, and South San Mateo Avenue and West South Avenue, which are dirt.

The existing land use at the Project site is primarily dry-farmed agriculture that has been intermittently irrigated. For the past 10 years, parcels within the Project site have been periodically in low-yield agricultural production (tilled, seeded, and harvested for winter wheat); occasionally irrigated (drip or sprinkler) and harvested for alfalfa seed or other crops; or disked twice a year and left fallow. There are no Williamson Act contracts binding any of the Project parcels.[1]

The Project would include improvements to infrastructure at the existing Tranquillity Switching Station (see Figure 2-3).

No naturally occurring vegetation communities occur on the Project site. Two human-made vegetation communities/land cover types occur on the Project site: Agriculture and Ruderal/Developed.

3.3 Adjacent Land Uses

Existing land uses surrounding the Project site consist of agriculture, solar development, and two rural residences. Non-irrigated agricultural land surrounds the Project site to the north, east, and

[1] The Williamson Act (also known as the California Land Conservation Act of 1965) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The contracted land is then restricted to agricultural and compatible uses through a rolling-term, 10-year contract between the private land owner and the local government.

west. These lands are owned mostly by the Westlands Water District, which keeps them in various states of low-value agricultural production or as fallowed land. The Great Valley Solar Facility and two rural residences border the Project site to the south. The Adams East Solar Facility is located approximately 0.4-mile northwest of the Project site.

3.4 Cumulative Development

As defined in the CEQA Guidelines Section 15355, the term "cumulative impacts" refers to two or more individual impacts that, when considered together, are substantial or will compound other environmental impacts. Cumulative impacts are the combined changes in the environment that result from the incremental impact of development of the proposed Project and other nearby projects. For example, traffic impacts of two nearby projects may be less than significant when analyzed separately but could have a significant impact when analyzed together. Cumulative impact analysis allows the EIR to provide a reasonable forecast of future environmental conditions and more accurately gauge the effects of a series of projects.

CEQA requires cumulative impact analysis in EIRs to consider either a list of planned and pending projects that may contribute to cumulative effects or a forecast of future development potential. The list-of-projects approach considers the incremental effects of a proposed project viewed in combination with the effects of past, present, and reasonably foreseeable probable future projects that could cause environmental impacts that are closely related to those of the project proposed. This EIR uses the list approach to provide a tangible understanding and context for analysing the potential cumulative effects of the Project. Factors considered in determining whether a project is a cumulative project include whether it would cause impacts of the same nature as the proposed Project in the same area at the same time.

Table 3-1 provides a list of projects within a 15-mile radius of the Project site that could cause impacts that could combine with those of the Project, and Figure 3-1 shows their locations. Although the list of projects is based on a 15-mile radius from the Project site, the geographic area of cumulative consideration is established on a resource-by-resource basis throughout Sections 4.1 through 4.14, as dictated by physical boundaries (such as the extent of the groundwater basin), and is not limited by the area shown in Figure 3-1. Projects include the Luna Valley Solar Project, located west of South Derrick Avenue, between West Dinuba Avenue and West South Avenue; the Heartland 1 and 2 projects, located West of Derrick Avenue between West Lincoln Avenue and West Manning Avenue; the Sonrisa Solar Project, located East of Derrick Avenue between West Manning Avenue and West Adams Avenue, and the Little Bear Solar 1 through 5 projects located south of West California Avenue, between San Bernardino and South Ohio.[2] Projects are either located close to or along the same major arterial as the Project, and construction schedules may overlap. These projects are considered in the cumulative analyses in Section 4, *Environmental Impact Analysis*.

[2] The Tranquillity and Adams East solar facilities are operational and addressed as part of the environmental baseline.

Table 3-1 Cumulative Projects within 15 Miles of the Project Site

Map Key.	Project Name/ Applicant	Location[1]	Approximate Distance from Project Site	Description	Status
County of Fresno					
1	Little Bear Solar 1, LLC	South of W. California between San Bernardino & S. Ohio	8 miles north	Solar Farm	Approved
2	Little Bear Solar 5, LLC	South of W. California between San Bernardino & S. Ohio	8 miles north	Solar Farm	Approved
3	Little Bear Solar 3, LLC	South of W. California between San Bernardino & S. Ohio	8 miles north	Solar Farm	Approved
4	Little Bear Solar 4, LLC	South of W. California between San Bernardino & S. Ohio	8 miles north	Solar Farm	Approved
5	Little Bear Solar 6, LLC	W. California Ave	8 miles north	Solar Farm	Approved
6	Luna Valley Solar I, LLC	West of S. Derrick Ave. between W. Dinuba Ave & W. South Avenue	1.5 miles northwest	Solar Farm	In process
7	Heartland 1, LLC	West of Derrick Ave between W. Lincoln Ave & W. Manning Ave	Adjacent	Renewable Energy	In Process
8	Heartland 2, LLC	West of Derrick Ave between W. Lincoln Ave & W. Manning Ave	Adjacent	Renewable Energy	In Process
9	Sonrisa Solar, LLC	East of Derrick Ave between W. Manning Ave & W. Adams Ave	Adjacent	Renewable Energy	In Process

[1] Cumulative project details were sourced from County of Fresno Projects list, last revised on February 11, 2020.

Note: The Tranquillity and Adams East solar facilities are operational and addressed as part of the environmental baseline.

Figure 3-1 Projects within 15 Miles of the Project Site

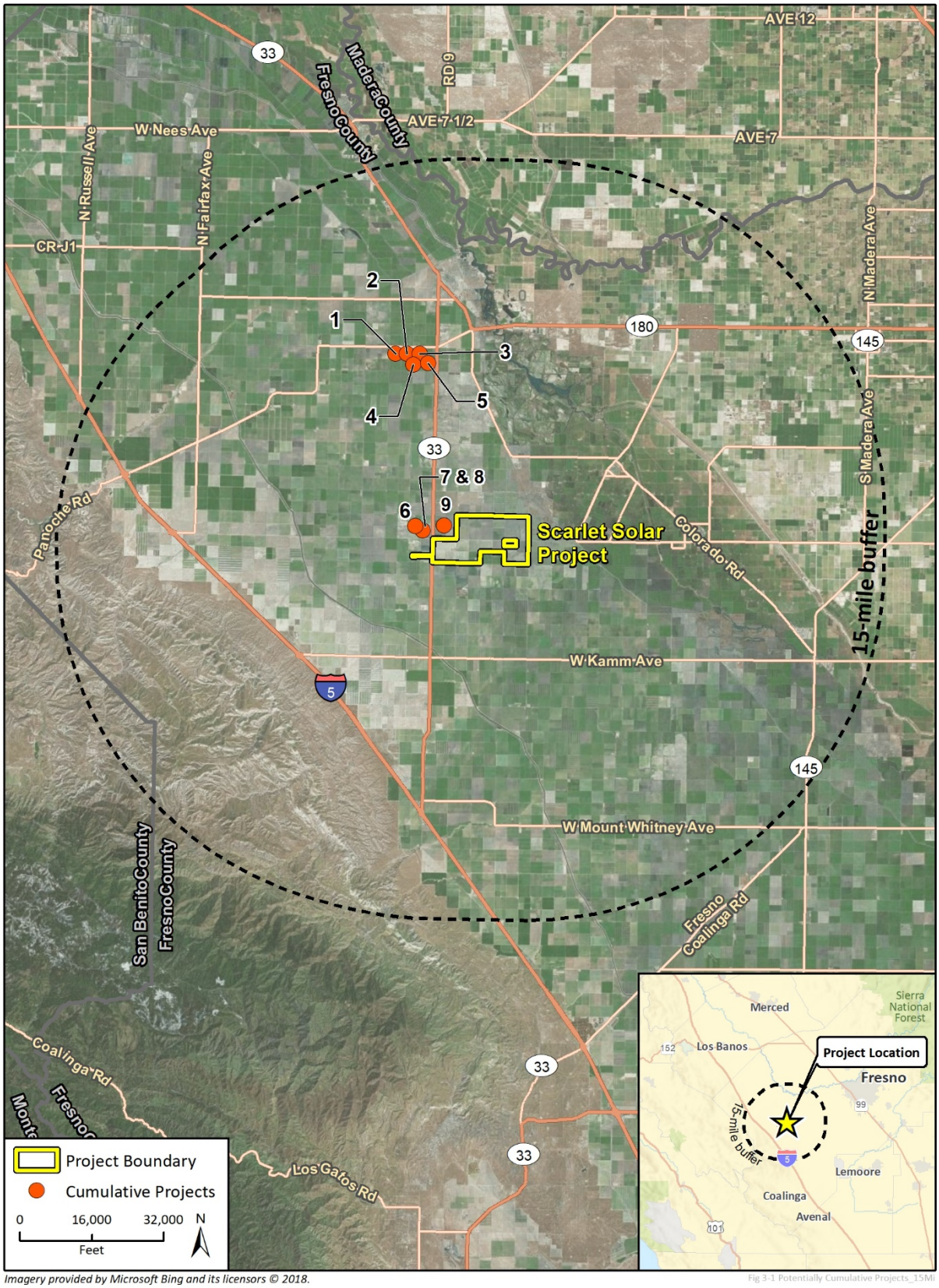

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Fig 3-1 Potentially Cumulative Projects_15Mi

4 Environmental Impact Analysis

This section discusses the possible environmental effects of the Scarlet Solar Energy Project for the specific issue areas identified through the Initial Study and scoping process as having the potential to experience significant effects. "Significant effect on the environment" is defined by the CEQA Guidelines Section 15382 as:

> a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. 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 assessment of each issue area begins with a discussion of the environmental setting related to the issue, which is followed by the impact analysis. Because the Project is composed of two separate components, the Solar Facility and the PG&E Improvements, a separate impact analysis is provided for each component. In the impact analysis, the first subsection identifies the methodologies used and the "significance thresholds," which are those criteria adopted by the County and other agencies, universally recognized, or developed specifically for this analysis to determine whether potential effects are significant. The next subsection describes each impact of the proposed Project. Each effect under consideration for an issue area is separately listed in bold text with the discussion of the effect and its significance. Each bolded impact statement also contains a statement of the significance determination for the environmental impact as follows:

- **Significant and Unavoidable.** An impact that cannot be reduced to below the threshold level even with adoption of reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the Project is approved per Section 15093 of the CEQA Guidelines.
- **Less than Significant with Mitigation Incorporated.** An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under Section 15091 of the CEQA Guidelines.
- **Less than Significant.** An impact that may be adverse, but does not exceed the threshold levels without the adoption of mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
- **No Impact.** The proposed Project would have no effect on environmental conditions

Following each environmental impact discussion is a list of mitigation measures (if required) and the residual effects or level of significance remaining after implementation of the measure(s). Where mitigation is referred to as an action to be performed by the project applicant, developer, property owner, contractor, operator that these terms are interchangeable and do not relieve one party from the responsibility of implementing the mitigation measure. In cases where the mitigation measure for an impact could have a significant environmental impact in another issue area, this impact is discussed and evaluated as a secondary impact. The analysis in each section first discusses the impacts associated with the Solar Facility, and then includes a separate analysis for the PG&E Improvements. The impact analyses in Sections 4.1 through 4.14 conclude with a discussion of cumulative effects on a resource-by-resource basis, evaluating the impacts associated with the Solar Facility and PG&E Improvements in conjunction with other related planned and pending

developments in the area. The list of other planned and pending developments in the area are listed and shown in Section 3, *Environmental Setting*. The Executive Summary of this EIR summarizes all impacts and mitigation measures that apply to the proposed Project.

It is noted that since publication of the Initial Study and Notice of Preparation of an EIR (NOP), the Environmental Checklist Form in Appendix G of the CEQA Guidelines was updated to include environmental resource questions more pertinent to current environmental issues California is encountering. Accordingly, the environmental analyses presented in Sections 4.1 through 4.15 in this EIR reflect the current significance thresholds listed in Appendix G of the CEQA Guidelines, with one exception. The current Appendix G of the CEQA Guidelines has an additional separate issue area called "Wildfire;" however, analysis of a project's potential to result in a significant impact to wildfire is only required if a project is "located in or near state responsibility areas or lands classified as very high fire hazard severity zones" (Appendix G of the State CEQA Guidelines). Because the Project site is not located in or near "very high fire hazard severity zones," a detailed analysis of the Appendix G significance thresholds for Wildfire is not necessary. It is also noted that the significance thresholds in Section 4.9, *Hazards and Hazardous Materials*, include a threshold regarding wildland fire. The reader is referred to Section 4.9 for an analysis regarding potential impacts associated with wildland fires/wildfires.

4.1 Aesthetics

This section identifies and evaluates issues related to aesthetics in the context of the Project. The discussion includes definitions of terminology related to visual assessments, the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methodology used to evaluate potential impacts, and the results of the impact analysis.

4.1.1 Visual Concepts and Terminology

Individual values, familiarity with a landscape, concern for a landscape, or interpretation of scenic quality can lead to various determinations of scenic quality and different responses to changes made to a landscape. Due to unique attachments to values for a particular landscape, visual changes will affect viewers differently. General assumptions can be made, however, about viewer sensitivity to scenic quality and visual changes. For the purpose of this analysis, visual or aesthetic resources are both the natural and built features of the landscape that contribute to the public's experience and appreciation of a given environment. Definitions of the following terms and concepts are provided to aid in understanding the content in this section.

Visual Quality is the overall visual impression or attractiveness of an area as determined by the particular landscape characteristics, including landforms, rock forms, water features, and vegetation patterns. The attributes of line, form, and color combine in various ways to create landscape characteristics whose variety, vividness, coherence, uniqueness, harmony, and pattern contribute to the overall visual quality of an area. For the purposes of this EIR, visual quality is defined according to three levels:

- **Indistinctive or industrial:** generally lacking in natural or cultural visual resource amenities typical of the region
- **Representative:** typical or characteristic of the region's natural and/or cultural visual amenities
- **Distinctive:** unique or exemplary of the region's natural and/or cultural scenic amenities

Viewer Exposure addresses variables that affect viewing conditions from potentially sensitive areas. Viewer exposure considers the following factors:

- Landscape visibility (the ability to see the landscape)
- Viewing distance (the proximity of viewers to the Project)
- Viewing angle (whether the Project would be viewed from above, below, or from a level line of sight)
- Extent of visibility (whether the line of sight to the Project area is open and panoramic or restricted by terrain, vegetation, and/or structures)
- Duration of view

Viewer Types and Volumes of use pertain to the types of use (e.g., public viewers including motorists) and amount of use (e.g., number of recreational users or motorists) that various land uses receive. Generally, recreational users are expected to be highly concerned with scenery and landscape character, whereas people who commute through a landscape daily to work are expected to have a lower concern for visual, scenic quality.

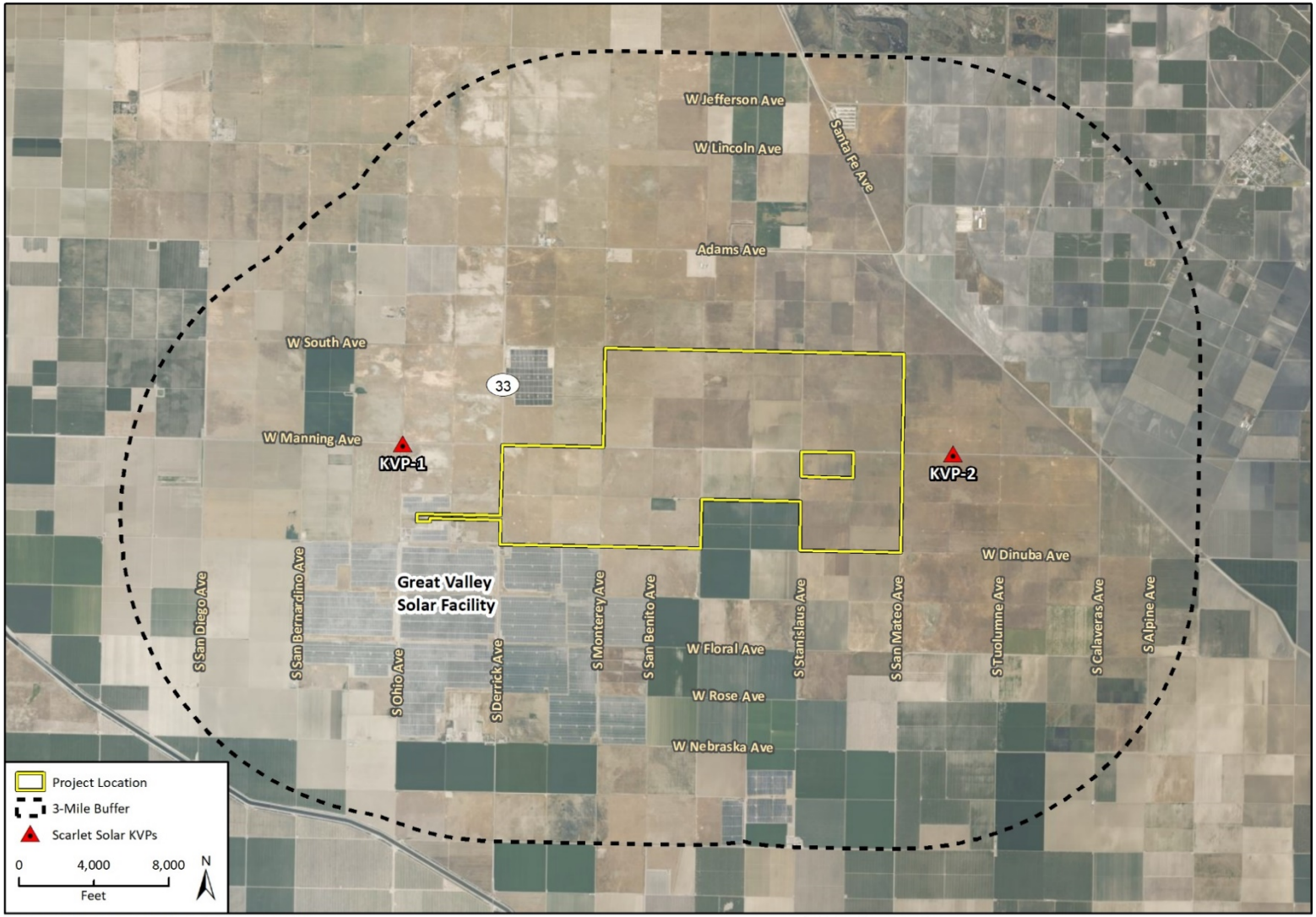
Visual Sensitivity is the overall measure of an existing landscape's susceptibility to adverse visual changes. People in different visual settings, typically characterized by different land uses surrounding a project, have varying degrees of sensitivity to changes in visual conditions depending on the overall visual characteristics of the place. In areas of more distinctive visual quality, such as designated scenic highways, designated scenic roads, parks, and recreation and natural areas, visual sensitivity is characteristically more pronounced. In areas of more indistinctive or representative visual quality, sensitivity to change tends to be less pronounced, depending on the level of visual exposure. This analysis of visual sensitivity is based on the combined factors of visual quality, viewer types and volumes, and visual exposure to the Project. Visual sensitivity is discussed according to high, moderate, and low ranges.

The following terms are defined below as they are used to describe and assess the aesthetic setting and impacts from the Project.

- **Color** is the property of reflecting light of a particular intensity and wavelength (or mixture of wavelengths) to which the eye is sensitive. It is the major visual property of surfaces.
- **Contrast** is the opposition or unlikeness of different forms, lines, colors, or textures in a landscape. The contrast can be measured by comparing project features with the major features in the existing landscape.
- **Form** is the mass or shape of an object or objects that appear unified.
- **Key Viewpoint (KVP)** is a point on a travel route or at a use area or a potential use area, where the view of a proposed activity would be most revealing. For the purposes of the following analysis, KVPs describe locations from which setting photographs were taken. Figure 4.1-1 shows the locations of the KVPs for this Project. These locations were selected based on the Project's viewshed, visual exposure, and important viewer groups.
- **Landscape character** is the arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality that distinguishes it from its immediate surroundings.
- **Line** is the path, real or imagined, the eye follows when perceiving abrupt differences in form, color, or texture. In landscapes, lines may appear as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.
- **Scenic vista** is an area designated, signed, and accessible to the public for the purposes of viewing and sightseeing.
- **Scenic highway** is any stretch of public roadway designated as a scenic corridor by a federal, state, or local agency.
- **Sensitive receptors or sensitive viewpoints** include individuals or groups of individuals with views of a site afforded by a scenic vista, scenic highway, or public recreation area.
- **Viewshed** for a project is the surrounding geographic area from which it is likely to be seen, based on topography, atmospheric conditions, land use patterns, and roadway orientations.

For the purpose of the following analysis, "light" refers to artificial light emissions, or the degree of brightness generated by a given source; "glare" is the sensation produced by luminance in the visual field sufficiently greater than the luminance to which the eye has adapted to cause annoyance, discomfort, or loss of visual performance and visibility (Bureau of Land Management 2013).

Figure 4.1-1 Key Viewpoint Locations



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4.1.2 Setting

4.1.2.1 Environmental Setting

This section discusses the environmental conditions related to aesthetics in the region and in the study area for this analysis, which includes the Project site and all land within 3 miles of the Project boundary. This study area was chosen because the surrounding lands are flat, and from distances of more than 3 miles, the curvature of the earth would reduce the Project site's visibility significantly. Environmental conditions discussed include the regional and local visual environment, sources of light and glare on the Project site, visual receptors, visual quality of the study area, KVPs selected to determine existing environmental conditions; and simulations presented to assess impacts associated with the Project.

a. Regional Visual Character

The Project site is in Fresno County, on the western edge of the San Joaquin Valley, approximately 12 miles east of the base of the Diablo coastal mountain range. The region defined as the San Joaquin Valley extends from the Sacramento-San Joaquin River Delta in the north to the Tehachapi Mountains in the south, and from the various California coastal ranges (such as Diablo) in the west to the Sierra Nevada mountain range in the east. Agricultural uses dominate in the region, and farm structures and rural residences periodically interrupt views of agricultural fields and orchards experienced by viewers traveling through the region. Smaller cities, such as Mendota and Firebaugh, are interspersed throughout the rural landscape. Larger cities, such as Fresno and Madera, are further east in the valley. The topography is relatively flat, and the area around the Project site offers open, expansive views of distant hills and mountains that frame the valley. The natural form of the low-elevation valley has been altered to support the growth and harvest of agriculture.

Section 4.15, *Issues Addressed in the Initial Study*, notes there are no designated scenic vistas or scenic highways in the Project site viewshed.

b. Local Visual Character

A mix of agricultural lands, rural residences, and solar facilities surround the Project site. Generally, the landscape comprises a mix of cultivated fields and fallow fields north, west, and east of the Project site. Fields are divided by paved and unimproved, narrow roads that create a grid pattern. The active use of agricultural equipment generates airborne dust, which creates a generally hazy environment and limits long-distance views. Due to the rural character of the landscape around the Project site, outdoor lighting appears in certain locations, but does not dominate the nighttime scene. SR 33 borders the western edge of most of the Project site, and forms the eastern edge of the PG&E Improvements area. Adjacent to the highway, SR 33 has lights, electrical utility poles, and power lines on the stretch of road near the Project site.

The Great Valley Solar Facility and two rural residences border the Project site to the south. The Adams East Solar Facility is approximately 0.4-mile northwest of the Project site. These solar facilities have an industrial character that interrupts the otherwise agricultural nature of the landscape. The undeveloped agricultural views in the Project vicinity can be described as representative of views in the region; with a generally rural landscape consisting of agricultural views interspersed with more industrial and developed land uses, including existing solar facilities, machinery, buildings, and structures associated with residential and agricultural operations.

On-Site Views

The Project site has been cultivated for the purpose of growing crops. Various dirt roads and transmission lines cross and are adjacent to the Project site. The Tranquillity Switching Station is at the western portion of the Project site. The site slopes gently from approximately 170 feet above mean sea level (amsl) in the northeast corner to approximately 200 feet amsl in the southwest portion of the site (Appendix J1). Paved roadways are present along the boundaries of the site, as described in Section 2, *Project Description*.

Figure 4.1-1 shows the locations of the KVPs of the Project site. Figure 4.1-2 and Figure 4.1-3 depict existing landscape characteristics. Views of the Project site from KVP 1 (Figure 4.1-2) show fallow agricultural fields in the foreground with electrical lines in the background. The foreground landscape is a mixture of brown and green hues. Views of the Project site from KVP 2 (Figure 4.1-3) show a similar landscape. A flat, broad, expansive plane of mostly light-colored vegetation is visible. Scattered agricultural equipment and trees can be seen along the horizon.

Off-Site Views

North

Generally, views to the north from the Project site are dominated by expansive views of broad, brown fields on a flat topographical plane divided by straight horizontal lines and views to the north may be characterized as agricultural/indistinctive. Views directly north of the Project site are predominantly agricultural fields bisected by unpaved agricultural access roads. Scattered rural residences are visible in the background. There are no mountains or hills present in views north; therefore, views generally end along the horizon with views of fields and rural residences. Existing power lines that cross the landscape also sporadically interrupt views to the north, with the Adams East Solar Facility visible farther north.

South

Land uses and views to the south from the Project site consist of the Great Valley Solar Facility, two rural residences, and agricultural uses beyond. The facility appears as a major industrial feature in the landscape, with visible solar panels and solar infrastructure. Views to the south include the straight, gray, horizontal lines of the Great Valley Solar Facility and active and fallow agricultural fields primarily brown or green hues, depending on the season. The terrain in the foreground is flat with straight, horizontal lines. Along the horizon, clusters of trees, agricultural structures, and power lines are visible. The Diablo range, the series of coastal mountains approximately 8 miles west of the Project site, is visible in the background looking south, but, due to often dusty conditions, the range appears hazy and gray above the horizon.

East

Views to the east from the Project site are broad, flat, and expansive of both active and fallow agricultural fields. Clustered rural residences and infrastructure associated with agricultural operations, including buildings, silos, and equipment, are visible along the horizon. Brown and green colors, expansive visual planes, and straight horizontal lines dominate views to the east.

Figure 4.1-2 Existing View from KVP 1 Looking East along West Manning Avenue toward the Project Site

Source: nc3d

Figure 4.1-3 Existing View from KVP 2 Looking West along West Manning Avenue toward the Project Site

Source: nc3d

West

Immediately west along the boundary of the Project site, views consist primarily of agricultural fields dominated by straight, horizontal lines, punctuated by the vertical forms of existing power lines. In the background, a view of the Diablo range is visible as a hazy gray form above the horizon.

Lighting Environment

There is no existing lighting on the Project site. Minimal off-site lighting exists near the Project site. Light sources in the study area include interior lighting (glow from windows) and a few exterior lights at the two rural residences adjacent to the southern boundary of the Project site and residences to the southeast and north. Due to the rural environment, street lighting is minimal, and occurs primarily at major intersections along SR 33. The closest streetlights to the Project site are at the corner of the Project site at the intersection of SR 33 and West Manning Avenue. Increased lighting is found along I-5 and within the communities of Tranquillity, approximately 3.5 miles northeast, and Three Rocks, approximately 5.5 miles south.

Viewer Types and Exposures

There are no parks or scenic vistas within 3 miles of the Project site. Motorists are the main viewer type that may be exposed to the Project site, along SR 33 and Manning Avenue.

Variables considered relative to how viewers might be affected include the angle of view, the extent to which views are open or screened, the duration of view, and viewing distance. Viewing angle and extent of visibility consider the relative location of the Project site to the viewer and whether visibility conditions would be open or panoramic, or limited by intervening vegetation, structures, or terrain. Duration of view pertains to the amount of time the Project typically would be seen from a sensitive viewpoint. In general, duration of view would be shorter in instances where the Project would be seen for short or intermittent periods (such as from major travel routes and recreation destination roads), and greater in instances where the Project would be seen regularly and repeatedly (such as from public use areas). Viewing distances are described according to whether the Project would be viewed in a foreground (within 0.5 mile or 2,640 feet), middle ground (0.5 mile to 2 miles), or background (beyond 2 miles) zone.

Visual Sensitivity

KVPs were established to provide a representative cross-section of affected landscapes in the visual study area. These locations, shown in Figure 4.1-1, were selected based on the Project's viewshed, visual exposure, and important viewer groups.

Visual sensitivity is determined by a composite measurement of the overall susceptibility of an area or viewer group to adverse visual or aesthetic impacts given the combination of existing landscape quality, viewer type, and exposure conditions.

Table 4.1-1 summarizes the overall visual sensitivity of the major viewer types near the Project site.

Table 4.1-1 Summary of Visual Sensitivity Findings

Primary Viewer Type	Visual Quality	Use and Visual Exposure Description	Visual Sensitivity
Local Motorists			
West Manning Avenue (KVP 1)	Representative	Brief views by local motorists in foreground, low view angle, unobstructed, short view duration.	Low to Moderate
SR 33 (KVP 2)	Representative	Brief views by local motorists, low view angle, unobstructed, short view duration.	Low to Moderate

4.1.2.2 Regulatory Setting

a. Federal and State

No federal or state statutes, regulations, plans, or policies govern aesthetics on the Project site.

b. Local

Fresno County General Plan

The Open Space and Conservation Element of the Fresno County General Plan evaluates the scenic resources of Fresno County and provides policies intended to protect and ensure development enhances those resources through various measures including identification, development review, acquisition, and other methods. This element does not identify the Project site as a scenic resource, nor does the element identify any scenic resources in the 3-mile study area. The policies in the Fresno County General Plan concerning scenic resources relevant to the Project are as follows:

- **Policy OS-K.1:** The County shall encourage the preservation of outstanding scenic views, panoramas, and vistas wherever possible. Methods to achieve this may include encouraging private property owners to enter into open space easements for designated scenic areas.
- **Policy OS-K.4:** The County should require development adjacent to scenic areas, vistas, and roadways to incorporate natural features of the site and be developed to minimize impacts to the scenic qualities of the site.

4.1.3 Impact Analysis

4.1.3.1 Methodology and Significance Thresholds

a. Methodology

This visual impact assessment identifies and assesses potential long-term adverse visual impacts on aesthetics and visual resources that could result from implementation of the Project. In the absence of a generally approved state or local system for evaluating the significance of potential impacts to aesthetics, this assessment included the following:

- Conducting visits to the Project site on August 10, 2018 for the purposes of:
  - Surveying the on-site 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; and,

- Taking photographs to document observed conditions.

- Identifying Project components that could affect representative views in the study area in terms of visual quality, character, and levels of light and glare, as informed by plans, descriptions, simulations, aerial photographs, and street-level photography.
- Assessing the Project's impacts to identified views by evaluating potential Project-caused change in the affected area's baseline visual quality and character.

Simulation preparation methods are described below.

Simulation Preparation

To represent views that would be experienced from sensitive viewpoints, two KVPs were selected for the simulation of post-Project conditions; Figure 4.1-1 shows the location of the KVPs and Figure 4.1-4 and Figure 4.1-5 show the results of these simulations. KVP 1 depicts the view looking east from 1 mile west of the Project site, representing the view travelers along West Manning Avenue and South Derrick Avenue would have of the solar panels, substation, gen-tie line, and associated infrastructure. KVP 2 depicts the view looking west from 0.5 mile east of the Project site, representing the view travelers along West Manning Avenue would have of the Project. Each KVP presents a single viewpoint that reflects the impact implementation of the Project would have on one or more sensitive receptors. As there are no scenic vistas, scenic highways, or public recreation areas in the vicinity of the Project site, no sensitive receptors as defined in Section 4.1.1 would be exposed to Project views. Therefore, this analysis focuses on the largest viewer group that would be exposed to Project views, which would be motorists traveling along major roadways.

For each viewer group analyzed, viewer exposure conditions were evaluated based on information of traffic flows along local roadways presented in Section 4.13, *Transportation*. The inventory of KVPs included three components: (1) identification and photo-documentation of the KVPs, (2) classification of the visual sensitivity of the KVPs, and (3) evaluation of the potential significance of Project-related changes. Figure 4.1-1 shows the location of each of the evaluated KVPs. No KVPs associated with off-site residences were evaluated, as no public views would be experienced from those locations.

Visual simulations of the Project from the identified KVPs were prepared to provide a comparison of pre- and post-Project conditions, as shown in Figure 4.1-2 through Figure 4.1-5 (Newlands & Company, Inc. [nc3d] 2018). The visual simulations provided in Figure 4.1-4 and Figure 4.1-5 are the results of a computer modeling process that involves conceptual engineering design data combined with geographic information system (GIS) and engineering data, and digital aerial photographs of the existing site to digitally model a simulated image of the Project.

Figure 4.1-4 Visual Simulation of the Project Site from KVP 1 Looking East along West Manning Avenue

Source: nc3d

Figure 4.1-5 Visual Simulation of the Project Site from KVP 2 Looking West along West Manning Avenue

Source: nc3d

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would result in a significant impact if it would:

a. Have a substantial adverse effect on a scenic vista;
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views[1] of the site and its surroundings; and/or
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The Initial Study in Appendix A determined the Project would result in no impact with respect to changes to scenic vistas (threshold a) or scenic resources (threshold b). Therefore, these issues are not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for an impact analysis discussion of these thresholds.

c. Definition and Use of Significance Criteria

An adverse visual impact may occur when (1) an action perceptibly changes the existing physical features of the landscape that are characteristic of the region or locale; (2) an action introduces new features to the physical landscape that are perceptibly uncharacteristic of the region or locale, or becomes visually dominant in the viewshed; or (3) an action blocks or totally obscures valued aesthetic features of the landscape. The degree of visual impact depends on how noticeable the adverse change is in conjunction with the visual sensitivity of the site. A noticeable visual impact is a function of the combination of Project features, context, and viewing conditions (angle of view, distance, and primary viewing directions). The key factors determining the degree of visual change are visual contrast, project dominance, and view blockage.

Visual Contrast is a measure of the degree of change in line, form, color, and texture that the Project would create, when compared to the existing landscape. Visual contrast ranges from none to strong, and may be defined as:

- None –The element contrast is not visible or perceived
- Weak –The element contrast can be seen but does not attract attention
- Moderate –The element contrast begins to attract attention and begins to dominate the characteristic landscape
- Strong – The element contrast demands the viewer's attention and cannot be overlooked

Visual dominance is a measure of a project feature's apparent size relative to other visible landscape features in the viewshed.

View blockage or impairment is a measure of the degree to which Project features would obstruct or block views of aesthetic features due to the Project's position and/or scale.

Overall adverse visual impact reflects the composite visual changes to both the directly affected landscape and from sensitive viewing locations.

[1] Public views are those that are experienced from publicly accessible vantage points.

4.1.3.2 Project Impacts and Mitigation Measures

Threshold c:	Whether the Project would substantially degrade the existing visual character or quality of public views of the site and its surroundings

Impact AES-1 THE PROJECT WOULD NOT SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER AND QUALITY OF PUBLIC VIEWS OF THE SITE AND ITS SURROUNDINGS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Construction

The construction phase of the Solar Facility would require delivery trucks, vehicles, and construction equipment use, as well as the creation of storage, staging, and active work areas. The construction period is anticipated to last approximately 18 months. Additionally, the location and use of equipment in active work areas would change during the construction period depending on which portions of the Project site were under active construction.

Construction of the Solar Facility would cause a change in the existing visual character and quality of the area by introducing a level of activity and heavy machinery to the Project site that is greater than that associated with existing agricultural operations. As described in Section 4.1.2.1, the existing visual character of the Project site is characterized as representative and industrial and the presence of agricultural equipment and airborne dust from agricultural activities is common. Therefore, although construction of the Project would result in a degree of change to visual quality on the Project site, construction would not impair or block any sensitive or unique visual resources or landscapes. Furthermore, impacts associated with views of construction activities and equipment would be temporary. Project impacts to the area's visual character during construction would be less than significant.

Operation and Maintenance

The Project would include solar panels inverters, two substations, a switchyard, telecommunications infrastructure, and a new transmission line. Types of module mounting systems include either fixed-tilt or tracking technology and the total height of the module system measured from the ground surface would be a maximum of 12 feet. Project substations and the switchyard would include approximately 65- or 70-foot-high dead-end structures. The switchyard would also include telecommunications infrastructure, which may include a telecommunications tower up to 100 feet in height or one microwave tower with antenna up to 55 feet in height. In addition, up to 30 110- to 150-foot-high electrical poles would be installed for the overhead gen-tie line. Figure 4.1-4 and Figure 4.1-5 show how the Project components would appear to sensitive viewers at KVPs when compared to existing (pre-Project) views at these locations.

Figure 4.1-4 and Figure 4.1-5 show simulated post-development views of the Project site looking east and west along West Manning Avenue from KVP 1 and KVP 2, respectively. These simulations depict the views motorists traveling west along West Manning Avenue would experience in comparison to existing views. Views of the Project site from West Manning Avenue would be of short-to-medium duration as the roadway borders the Project site. The extent of views of the Project would be mostly open and panoramic. Based on traffic volumes provided in Section 4.13, *Transportation,* roadways surrounding the Project site have a low-to-moderate number of viewers,

depending on the day, and an overall low-to-moderate level of visual sensitivity due to the lack of distinctive visual quality, as identified in Table 4.1-1.

The existing view of KVP 1 reflects fallow agricultural fields in the foreground with electrical lines in the background. The simulation reveals that the Project's solar photovoltaic (PV) panels would be the most visible component of the Project and would have a low profile in the viewshed, but would be visible along the horizon. This would create a low visual contrast with the existing landscape, as it would only affect the background and horizon line. The solar panels and components detailed above would contribute to existing industrial elements in the landscape, such as the electrical utility lines and the adjacent Great Valley Solar Facility. Project components would partially obstruct representative views of agricultural land very close to the horizon, but would not block or obscure views of attractive or unique landscape elements, such as mountains in the far distance. In the context of the existing local visual character and quality, the Project would add industrial elements to a local visual character that already includes some industrial elements. Therefore, the Project would introduce a low degree of change in local visual quality. Given the low-to-moderate visual sensitivity of motorists traveling along West Manning Avenue, impacts would not be significant.

The existing view of KVP 2 also reflects agricultural fields in the foreground with electrical lines in the background. A flat, broad, expansive plane of mostly light-colored vegetation is visible. Scattered structures and trees appear along the horizon. The simulation reflects that the solar panels would be barely visible in the background and up to the horizon line by westbound motorists. The facility would create a moderate visual contrast along the horizon. The solar panels would follow the existing line along the horizon, but would introduce a darker line that would resemble a flat shadow near the horizon. Overall, this KVP demonstrates the Project elements would introduce moderate visual contrast in the landscape but would not dominate the landscape or block important visual elements. Additionally, the Project components would not block or impair scenic features present in the viewshed. The visual change to the existing character and visual quality of the site would be low-to-moderate. In conjunction with the low-to-moderate visual sensitivity, impacts to visual quality resulting from the Project would not be significant.

The above analysis of KVPs demonstrates the Project elements would introduce a low-to-moderate level of visual contrast to the existing landscape and would have low potential to dominate views from certain locations. Project elements would not block or impair any unique scenic features in the viewshed. Viewers along West Manning Avenue would barely be able to see the Project components along the horizon when traveling east. Overall, given the industrial and representative nature of views in the Project vicinity and the low-to-moderate sensitivity of viewers, the Project would introduce a level of change to local visual quality and character that would be adverse but not significant. Therefore, impacts to visual quality from Project operation and maintenance would be less than significant.

Decommissioning and Site Restoration

Decommissioning and site restoration activities would include removal of Project components and land restoration to return the Project site to pre-development conditions. Construction equipment and vehicle-related visual impacts during decommissioning would be similar to impacts during construction. As with construction, these impacts would be temporary, lasting approximately one year until the site is returned substantially to pre-development conditions, a relative visual benefit over the long-term. Therefore, visual impacts from decommissioning would be less than significant.

PG&E Improvements

The PG&E Improvements would involve expansion of an existing switching station, which would not be visually obtrusive for motorists traveling south on SR 33 and would look similar to the existing electrical infrastructure. Construction or operation of the PG&E Improvements would not substantially change the existing visual character or quality of the area compared to existing conditions. Therefore, the PG&E Improvements would have a less than significant impacts on the visual character and public views.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to the visual character and public views and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold d:	Whether the Project would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Impact AES-2 THE PROJECT COULD CREATE A NEW SOURCE OF LIGHT AND GLARE. HOWEVER, THE PROJECT WOULD NOT ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS IN THE PROJECT AREA. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Construction

LIGHTING

Construction of the Project primarily occurs during daylight hours and would not require lighting. However, occasional nighttime construction would be required, including for electrical connection, inspection, and testing activities. These activities would be performed using temporary lighting directed downward to illuminate work areas and minimize impacts to neighboring properties and wildlife in the Project vicinity. Any lighting used during construction activities would be occasional, temporary, and would be shielded downward. Therefore, the potential for nighttime lighting during construction to impact nighttime views would be minimal, and impacts would be less than significant.

GLARE

Construction would involve increased vehicle traffic and the transport and use of construction equipment and materials. These activities would temporarily increase glare conditions near the Project site due to an increase in reflective materials, such as construction equipment and vehicles. However, any increases in glare that would result from construction activities would be minimal and temporary. Construction activities would occur on focused areas of the site as construction progresses and any sources of glare would not be stationary for a prolonged period. Additionally,

the surface area of construction equipment would be minimal compared to the scale of the sites. As a result, Project construction activities would not introduce new, substantial sources of glare that could affect daytime views in the vicinity, and impacts would be less than significant.

Operation and Maintenance

LIGHTING

As described in Section 2.9.7, *Lighting,* lighting proposed for the operation and maintenance phase of the Project would include motion-activated security lighting around substation areas, the O&M building, inverter-transformer stations, at gates, and along perimeter fencing. Due to the rural nature of the Project site, sensitive receptors in the area are primarily motorists traveling on local roadways, who would not be affected substantially by the additional lighting. Other sensitive viewers would be the two residences located to the south of the Project site. The residences are located over 100 feet from the Project site boundary, and perimeter lighting would be set back 50 feet within the Project site. Consistent with Fresno County design requirements, all lighting would be shielded or downward facing. Compliance with design and development standards would ensure that potential impacts from lighting are minimized. Due to the minimal amount of shielded lighting proposed for the operation and maintenance phase of the Project and the distance to sensitive receptors, impacts to nighttime views from lighting would be less than significant.

GLARE

The reflection of sunlight off solar panel surfaces would be the primary source of potential glare from the Project. Solar panels comprise cells designed to capture solar energy to convert it into usable energy. Therefore, solar panels are designed to absorb as much light as possible to maximize the efficiency of energy production. Additionally, PV panels are covered with a tempered glass layer treated with an anti-reflective coating that further reduces the reflectivity of the panels. When compared to common reflective surfaces, solar panels without an anti-reflective coating produce around the same amount of reflectivity as water, which is about half the amount of reflectivity as standard glass commonly used in residential or commercial applications (Shields 2010). If an anti-reflective coating is applied to the solar panels, the reflectivity of the panels can be reduced further to substantially less than that of water.

As described in Section 2, *Project Description*, the Project would use fixed-tilt arrays, oriented along an east-west axis with modules facing generally south or single-axis tracking arrays, oriented along a north-south axis with modules tracking east to west to follow the movement of the sun. Both types of arrays are described in Section 2.9.1, *Photovoltaic Modules and Support Structures*.

The single-axis tracking system would orient panels perpendicular to incoming solar radiation. This system would maximize the solar cell efficiency, as the panels follow the sun on its path across the sky. This tracking system would allow incident solar rays to be perpendicular to the PV panel. Any light that hits the panel would be reflected at an angle toward the light source rather than toward motorists or sensitive receptors on the ground. The single-axis horizontal tracking system would be arranged in north-to-south-oriented rows and would track the sun in the east-west direction. Using this system, effects on westbound motorists would likely be greatest in the early morning when the sun rises in the east, and impacts to eastbound motorists would likely be greatest in the evening hours as the sun sets in the west.

Additional glare could be created by metal components of the Solar Facility. The amount of glare created by such components would depend on the material type, surface area, and the orientation

of the viewer. Given the orientation of the panels and the low visual profile of the Project, the period during which glare from panels or other metal components of the Project could potentially be seen by motorists would be relatively short (i.e., a matter of minutes) and would be of relatively low intensity.

Due to the relatively low intensity and short duration of Project-caused glare, the potential impact would not be significant. Therefore, operation and maintenance of the Project would not introduce a source of light or glare that would significantly impact views in the area, and impacts would be less than significant.

Decommissioning

The impacts of light and glare during decommissioning and site restoration are anticipated to be similar to those of construction. Decommissioning is not likely to include nighttime activities and would not create a source of lighting that would impact nighttime views. Although decommissioning activities would require the use of vehicles and equipment similar to construction, any sources of glare would minimal and temporary. Decommissioning activities would occur on focused areas of the site as the process progresses, and any sources of glare would not be stationary for a prolonged period. Additionally, the surface area of construction equipment would be minimal compared to the scale of the site. Once decommissioning and site restoration is complete, the Project site would be returned to its pre-Project condition, which does not include substantial nighttime lighting or daytime glare. Temporary impacts during the decommissioning process would be less than significant, and long-term impacts would be beneficial as on-site light and glare sources would be removed, restoring the lighting and glare environment of the Project site to pre-Project levels.

PG&E Improvements

Construction of the PG&E Improvements would primarily occur during daylight hours. Any lighting needed for occasional nighttime construction work would be occasional, temporary, and would be shielded downward. Overall construction of the PG&E Improvements would not create substantial glare from increased vehicular traffic. In addition, these activities would be minimal and temporary and would occur on focused area of the site. The PG&E Improvements would involve expansion of an existing switching station which would not be visually obtrusive for motorists traveling south on SR 33 and would not introduce substantial new sources of light or glare. Therefore, the PG&E Improvements would have a less than significant impacts on new sources of light and glare.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to light and glare and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.1.3.3 Cumulative Impacts

The Project would have no impact with respect to scenic resources in a state scenic highway or scenic vistas because none exist in the Project study area. Therefore, the Project would not cause or contribute to a significant cumulative impact on such resources. Due to the isolated angles at which glare is experienced, the Project's less-than-significant impact related to glare could not combine with impacts from other facilities. Therefore, the Project's impact to visual resources resulting from glare would not create a significant adverse impact and would not be cumulatively considerable.

The geographic scope of potential cumulative impacts to the existing visual character or quality of public views includes the viewshed along SR 33 and locations from which a viewer could see the Project along with other projects (where visual impacts could be additive). Generally, projects located greater than 3 miles from the Project site would not be visible in the same viewshed. Cumulative aesthetic impacts could occur if the Project contributes to visual changes to the landscape visible or perceived by the public, either within the same viewpoints, or as a noticeable element in a cumulative viewing experience (e.g., a driver on SR 33 or a local road).

Impacts from the Project could result in a cumulative effect on visual resources in combination with other past, present, or reasonably foreseeable future actions. Cumulative construction disturbances could include traffic, temporary facilities and equipment, and dust from earth moving and exposed soil. Operation and maintenance-related cumulative visual impacts would include nighttime security lighting and increased vehicle and personnel activity in the area relative to baseline conditions. Decommissioning and restoration activities would contribute visual impacts that would be similar to those caused during Project construction to cumulative conditions for the duration of this phase of the Project.

As shown in Figure 3-1 and Table 3-1, Luna Valley Solar I, Heartland 1 and 2, and Sonrisa Solar are cumulative projects proposed within 3 miles of the Project site that could cause impacts similar to those associated with the Project. Luna Valley Solar I would consist of approximately 1,252 acres of PV facilities. Sonrisa Solar would consist of 1,700 acres of PV facilities. Heartland 1 and 2 would consist of 1,384 and 1,116 acres of renewable energy facilities. In addition, the Great Valley Solar Facility, which has already been constructed, is located south of the Project site and consists of 3,732 acres of PV facilities. Together, these PV and renewable energy facilities and the proposed Project would add an industrial visual element to the landscape that would create a moderate-to-strong visual contrast with the surrounding agricultural landscape, visible to motorists along SR 33. However, due to the low-profile nature of the solar facilities, components would be visually obtrusive only when a viewer is adjacent to one of the facilities. As demonstrated in the visual simulation presented in Figure 4.1-2, from distances of approximately 1 mile or greater, solar projects are barely noticeable and would not have a significant impact on visual resources. In addition, motorists would only be able to see these solar and renewable energy facilities in the foreground for approximately 7 minutes and these facilities would not block or impair any significant or unique viewsheds along the route. The Project in combination with Luna Valley Solar I, Heartland 1 and 2, Sonrisa Solar, and Great Valley Solar facilities would not significantly block any unique visual resources and would not dominate the cumulative visual setting. Therefore, from public viewing locations, the impacts of the Project and cumulative development within a 3-mile radius of the Project site would be considered adverse but less than significant.

In addition to impacts on the viewshed from solar facilities within three miles, impacts of converting agricultural land to solar/industrial facilities from all existing and proposed solar projects in the region would result in the degradation of the existing visual character. However, as discussed under

Impact AES-1, the solar projects would introduce a low-to-moderate level of visual contrast to the existing landscape and would have low potential to dominate views from certain locations. Due to the low-to-moderate sensitivity of viewers, cumulative impacts on the existing visual character would be less than significant.

4.2 Agricultural Resources

This section identifies and evaluates issues related to agricultural resources in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used to evaluate potential impacts, and the results of the impact analysis. The analysis presented in this section is based in part on a site-specific Land Evaluation and Site Assessment (LESA) prepared by HELIX Environmental Planning, Inc. (HELIX) in March 2019 (Appendix C).

4.2.1 Setting

4.2.1.1 Environmental Setting

For the purposes of this environmental analysis, the term "Farmland" refers to the California Department of Conservation's (CDOC) Farmland Mapping and Monitoring Program (FMMP) categories "Prime Farmland," "Unique Farmland," and "Farmland of Statewide Importance" (hereafter collectively referred to as Farmland). These categories are defined in Section 4.2.1.2, *Regulatory Setting*.

It is noted that another category, "Farmland of Local Importance," occurs on the Project site, which in Fresno County includes all farmable lands that do not meet the definitions of Farmland. Farmland of Local Importance in Fresno County includes land that is or has been used for irrigated pasture, dryland farming, confined livestock and dairy, poultry facilities, aquaculture, and grazing land (CDOC 2017). Because the definition of "Farmland" does not include Farmland of Local Importance, this category is not discussed in detail in this section.

a. Overview of Agriculture in Fresno County

In 2016 (which is the latest available data), approximately 1.17 million acres of land in Fresno County were classified as Farmland (CDOC 2016a). Of this Farmland, 675,722 acres were classified as Prime Farmland, 397,134 acres were classified as Farmland of Statewide Importance, and 94,902 acres were classified as Unique Farmland (CDOC 2016a). Between 2014 and 2016, 20,143 acres of Farmland (1.72 percent) were converted to non-agricultural use (CDOC 2016a). Between 2000 and 2016, Fresno County's total Farmland was reduced by 58,330 net acres of Prime Farmland, 94,435 net acres of Farmland of Statewide Importance, and 9,321 net acres of Unique Farmland (CDOC 2016b).

b. Agricultural Resources on the Project Site

As described in Section 2.6.1, *Existing Land Use*, the Project site is used primarily for dry-farmed agriculture. For the past 10 years, the parcels comprising the Project site intermittently have been in low-yield agricultural production (tilled, seeded, and harvested for winter wheat); intermittently irrigated (drip or sprinkler) and harvested for alfalfa seed or other crops; or disked twice a year and left fallow. The site is subject to high levels of selenium and a water table that does not provide sufficient drainage for most commercially irrigated crops. For the portion of the Project site cultivated without the benefit of irrigation, the productivity of these crops depends entirely on rainfall. When the unirrigated crops fail to mature to harvest, the land is grazed as rangeland grasses. All of the parcels in the Project footprint are part of Westlands Water District settlements

that require a non-irrigation covenant upon transfer of ownership. Existing land uses surrounding the Project site consist of agriculture, solar development, and two rural residences.

There are no Williamson Act contracts binding any of the parcels in the Project site (CDOC 2016c). The Project site is zoned AE-20, Exclusive Agricultural with a minimum lot size of 20 acres (Fresno County 2011).

The FMMP designates lands on the Project site as Farmland of Statewide Importance, Farmland of Local Importance, Vacant or Disturbed Land, and Urban and Built-Up Land (CDOC 2019a). The Solar Facility includes 1,363 acres designated Farmland of Statewide Importance and the remainder is designated Farmland of Local Importance (CDOC 2019a). A small portion of the site, including the PG&E Improvements, is designated as Vacant or Disturbed Land and Urban and Built-Up Land, which are not considered Farmland. Figure 4.2-1 shows FMMP classifications on the Project site.

4.2.1.2 Regulatory Setting

a. Federal

No federal statutes, regulations, plans, or policies govern agricultural resources on the Project site.

b. State

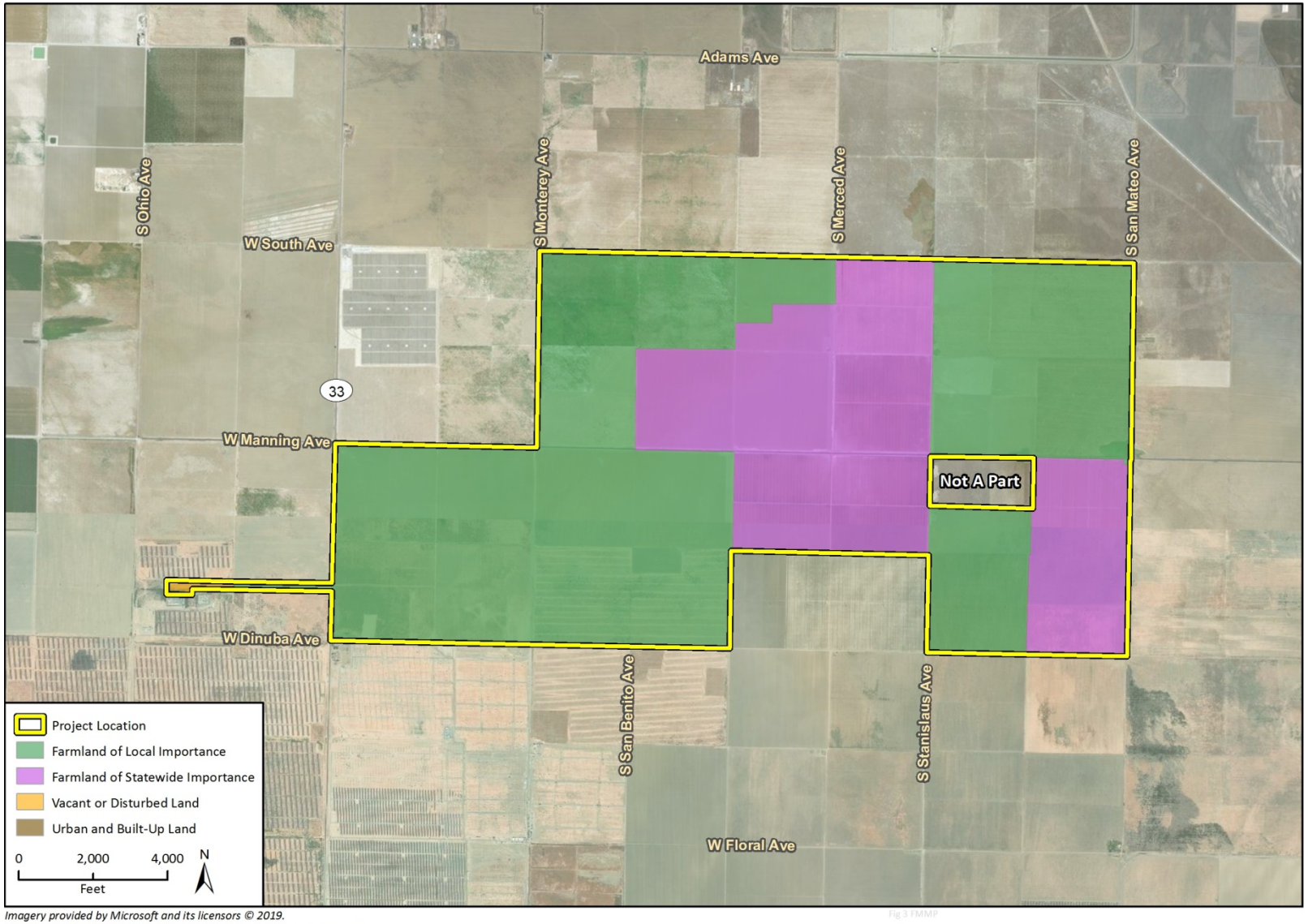
California Farmland Mapping and Monitoring Program

The CDOC's FMMP provides a classification system for farmland based on technical soil ratings and current land use (CDOC 2019b). The FMMP is an informational service only and does not have regulatory jurisdiction over local land use decisions. The minimum land use mapping unit is 10 acres unless specified; smaller units of land are incorporated into the surrounding map classifications.

Generally, any conversion of land from Prime Farmland, Unique Farmland, and/or Farmland of Statewide Importance to a lesser quality category or a non-agricultural use would be considered an adverse impact, as discussed below in Section 4.2.2.1.b., *Significance Thresholds*. These Farmland categories are defined as follows (CDOC 2019b):

- **Prime Farmland:** Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Farmland of Statewide Importance:** Farmland that is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland:** Farmland of lower quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Figure 4.2-1 Farmland Mapping and Monitoring Program Designations on the Project Site



Imagery provided by Microsoft and its licensors © 2019.
Additional data provided by California Department of Conservation, 2016.

California Land Conservation Act of 1965

The California Land Conservation Act of 1965 (Williamson Act, Government Code Section 51200 et seq.) preserves open spaces and agricultural land in exchange for property tax breaks. The Williamson Act discourages urban sprawl and prevents landowners from developing their property for the greater land value of commercial and/or residential uses. The Williamson Act is a state program implemented at the county level that allows agricultural landowners to contractually agree to retain land included in an agricultural preserve in agricultural or open space uses for 10 years and, in return, to pay reduced property taxes. The term of the contract automatically renews each year unless not renewed or cancelled, so that the contract always has a 10-year period left. The Project would not be located on lands subject to a Williamson Act contract.

c. Local

Fresno County General Plan

The Agriculture and Land Use Element of the Fresno County General Plan describes land use designations and development standards for unincorporated land in the county, and sets out goals, policies, and programs related to agriculture and land use. The General Plan land use designation for the Project site is Agriculture, which provides for the production of crops and livestock, and for location of necessary agriculture commercial centers, agricultural processing facilities, and certain nonagricultural activities. No overlay designations apply to the Project site (Fresno County 2000). The following agricultural-related General Plan policies and programs are applicable to the Project:

- **Policy LU-A.1:** The County shall maintain agriculturally-designated areas for agriculture use and shall direct urban growth away from valuable agricultural lands to cities, unincorporated communities, and other areas planned for such development where public facilities and infrastructure are available.
- **Policy LU-A.2:** The County shall allow by right in areas designated Agriculture activities related to the production of food and fiber and support uses incidental and secondary to the on-site agricultural operation. Uses listed in Table LU-3 are illustrative of the range of uses allowed in areas designated Agriculture.
- **Policy LU-A.3:** The County may allow by discretionary permit in areas designated Agriculture, special agricultural uses and agriculturally related activities, including value-added processing facilities, and certain non-agricultural uses listed in Table LU-3.

  Approval of these and similar uses in areas designated Agriculture shall be subject to the following criteria:

  a. The use shall provide a needed service to the surrounding agricultural area which cannot be provided more efficiently within urban areas or which requires location in a non-urban area because of unusual site requirements or operational characteristics;
  b. The use should not be sited on productive agricultural lands if less productive land is available in the vicinity;
  c. The operational or physical characteristics of the use shall not have a detrimental impact on water resources or the use or management of surrounding properties within at least one-quarter mile radius;
  d. A probable workforce should be located nearby or be readily available;

  […]

It is noted that the remaining criteria under Policy LU-A.3 (e through h) relate to the approval of commercial centers, value-added agricultural processing facilities, churches, schools, and existing commercial uses, and are therefore not applicable to the Project.

- **Policy LU-A.13:** The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations.
- **Policy LU-A.14:** The County shall ensure that the review of discretionary permits includes an assessment of the conversion of productive agricultural land and that mitigation be required where appropriate.
- **Program LU-A.C**: The County shall develop and implement guidelines for design and maintenance of buffers to be required when new non-agricultural uses are approved in agricultural areas. Buffer design and maintenance guidelines shall include, but not be limited to, the following:
  a. Buffers shall be physically and biologically designed to avoid conflicts between agriculture and non-agricultural uses.
  b. Buffers shall be located on the parcel for which a permit is sought and shall protect the maximum amount of farmable land.
  c. Buffers generally shall consist of a physical separation between agricultural and non-agricultural uses. The appropriate width shall be determined on a site-by-site basis taking into account the type of existing agricultural uses, the nature of the proposed development, the natural features of the site, and any other factors that affect the specific situation.
  d. Appropriate types of land uses for buffers include compatible agriculture, open space and recreational uses such as parks and golf courses, industrial uses, and cemeteries.
  e. The County may condition its approval of a project on the ongoing maintenance of buffers.
  f. A homeowners association or other appropriate entity shall be required to maintain buffers to control litter, fire hazards, pests, and other maintenance problems.
  g. Buffer restrictions may be removed if agricultural uses on all adjacent parcels have permanently ceased. (See Policy LU-A.16).
- **Program LU-A.E:** The County shall continue to implement the County's Right-to-Farm Ordinance, and will provide information to the local real estate industry to help make the public aware of the right-to-farm provisions in their area.

Fresno County Zoning Ordinance

The Project site is zoned AE-20 (Exclusive Agricultural with a minimum lot size of 20 acres) (Fresno County 2011). As indicated in Section 816 of the Fresno County Zoning Ordinance, permitted uses in the AE District include raising livestock, poultry, and plant crops; single-family residences and accessory and farm buildings; and other agricultural and home occupation uses. Electrical transmission and distribution substations are allowed in the AE District subject to review and approval of the Public Works and Planning Director (Fresno County Zoning Ordinance Section 816.2[D]). Additionally, Fresno County processes solar PV facilities and telecommunications infrastructure through the Unclassified Conditional Use Permit process based on Section 853.B.14 of the Zoning Ordinance.

Fresno County Solar Facility Guidelines

The Fresno County Solar Facility Guidelines (2017) include a number of provisions applicable to the review process for solar facility applications that relate to agricultural resources. For analysis of the Project's consistency with the Solar Facility Guidelines as a whole, see Appendix L2. Guidelines specific to agricultural resources include:

- Submission of information regarding historical agricultural use;
- Submission of information regarding source of water;
- Identification of current status with respect to Williamson Act, conservation easements or other similar designation;
- Identification of soil type and mapping units;
- Description of measures that will be implemented to create a minimum 50-foot buffer from the edges of the property boundaries to the closest structural improvements or equipment (excluding fencing);
- A Reclamation Plan detailing the time frame and approach to restoration of the site to agricultural use;
- Details of efforts to locate the project on non-agricultural land;
- Development of a Weed and Pest Management Plan; and
- Acknowledgement of the County's Right to Farm Ordinance.

Fresno County Right-to-Farm Ordinance

For certain activities within 300 feet of an AE zoning district, Section 17.72.075(A) of the Fresno County Code of Ordinances requires recordation with the Fresno County Recorder of a notice in substantially the following form:

> **Fresno County Right-to-Farm Notice**
>
> It is the declared policy of Fresno County to preserve, protect, and encourage development of its agricultural land and industries for the production of food and other agricultural products. Residents of property in or near agricultural districts should be prepared to accept the inconveniences and discomfort associated with normal farm activities. Consistent with this policy, California Civil Code 3482.5 (right-to-farm law) provides that an agricultural pursuit, as defined, maintained for commercial uses shall not become a nuisance due to a changed condition in a locality after such agricultural pursuit has been in operation for three years.

In conformance with the Fresno County Solar Facility Guidelines (2017), the Applicant would be required to record such a notice prior to County issuance of permits.

4.2.2 Impact Analysis

4.2.2.1 Methodology and Significance Thresholds

a. Methodology

Potential effects are assessed with respect to agricultural resources based upon existing publications and maps completed by FMMP. The potential for impacts to agricultural resources is analyzed using available data from the FMMP. In addition, the severity and significance of

agricultural resources are analyzed in the context of existing regulations and policies aimed at lessening potential impacts to agricultural resources. This analysis is also based in part on a site-specific LESA (HELIX 2019; Appendix C).

The Project site was evaluated using the California LESA Model to rate the quality and availability of agricultural resources and to identify whether the Project would meet the threshold criteria as having a significant impact to Agricultural Resources under the CEQA Guidelines. As stated in Appendix G of the CEQA Guidelines, the LESA Model is intended to provide lead agencies with an optional methodology to ensure significant effects on the environment of agricultural land conversion are quantitatively and consistently considered in the environmental review process. The model provides an approach for rating the relative quality of land resources using a point-based evaluation composed of six different factors. Land Evaluation factors are based upon measures of soil resource quality including Land Capability Classification and Storie Index, while Site Assessment factors are evaluated based on a project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is rated on a 100-point scale. Each factor has a relative weight and are combined to one numeric score that is then evaluated against the scoring thresholds provided in Table 4.2-1. A project's LESA model score is used to determine the potential significance of the conversion of agricultural lands. The LESA Model score will also serve as a benchmark documenting the existing condition of Project site soils at the time of conversion to the proposed Project. The PG&E Improvements are not included within the scope of the LESA because they are not located on Farmland.

Table 4.2-1 California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0 to 39 points	Not considered significant
40 to 59 points	Considered significant only if LE and SA subscores are greater than or equal to 20 points
60 to 79 points	Considered significant unless either LE or SA subscores is less than 20 points
80 to 100 points	Considered significant

Notes: LE- Land Evaluation, SA- Site Assessment

Source: Department of Conservation 1997

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would result in a significant impact if it would:

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract;
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]);
d. Result in the loss of forest land or conversion of forest land to non-forest use; and/or
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

The Initial Study in Appendix A determined that the Project would result in no impact with respect to existing zoning for, or cause rezoning of, forest land or timberland (threshold c), or the loss or conversion of forest land to non-forest use (threshold d and the latter part of threshold e). Therefore, these issues are not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for an impact analysis discussion of these thresholds.

4.2.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the Project would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use

Impact AG-1 A PORTION OF THE PROJECT SITE CONTAINS FARMLAND OF STATEWIDE IMPORTANCE. BASED ON A LAND EVALUATION ANALYSIS AND THE REQUIRED RECLAMATION AGREEMENT, IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

As shown in Figure 4.2-1, the Solar Facility would involve the construction, operation and maintenance, and decommissioning of a solar PV energy generation facility on 1,363 acres of land designated as Farmland of Statewide Importance, and of the remaining land is designated as Farmland of Local Importance, as designated by the CDOC's FMMP. Although the Solar Facility site contains Farmland of Local Importance, as described in Section 4.2.1, *Setting,* this category of farmland is not included in the analysis for the purposes of CEQA.

The areas of the Solar Facility site designated as Farmland of Statewide Importance are located near the center and in the southeastern portion of the site, and these areas would be developed with solar arrays and their associated infrastructure. Development activities associated with the Solar Facility that could affect lands with this farmland classification would include the installation of PV module support structures, inverter equipment, and transformers. Structures supporting the PV modules would consist of steel piles spaced 10 feet apart and driven into the soil. Each 2-MW increment would include an inverter-transformer station constructed on a concrete pad or steel skid, centrally located in the PV arrays. Collector poles and dead-end structures would also be installed. These facilities would require minimal ground disturbance, as previous agricultural activity has leveled the soil.

As previously discussed, a LESA Model analysis was prepared for the Solar Facility site (Appendix C). The weighted Land Evaluation (LE) subscore is 16.32, while the weighted Site Assessment (SA) score is 40.95. The final LESA Model score for the Solar Facility site is 57.27. As shown in Table 4.2-1, a final LESA score between 40 and 59 is considered significant only if LE or SA subscores are each greater than or equal to 20 points. The weighted SA subscore is greater than 20, but the weighted LE subscore is only 16.32 (less than 20 points); therefore, the proposed Solar Facility would have a less than significant impact on agricultural resources. In addition, the estimated operational life of the Solar Facility is approximately 35 years, at which time the site would be decommissioned and restored. The County would require a condition of approval for the Project Applicant to enter into a reclamation agreement, which would require on-site soils to be restored to current agricultural conditions (i.e., a LESA score of 57.27), allowing for resumed agricultural use after completion of the

Solar Facility. Therefore, impacts related to the conversion of Farmland of Statewide Importance to non-agricultural use would be less than significant.

PG&E Improvements

The portion of the Project site on which the PG&E Improvements would be implemented is designated Vacant or Disturbed Land and Urban and Built-up Land, and is entirely within the existing footprint of the Tranquillity Switching Station and existing PG&E easements for transmission structures. As no designated Farmland is present in the PG&E Improvements area, the PG&E Improvements would not convert Farmland to non-agricultural use. Impacts would be less than significant and no mitigation would be required.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to conversion of agricultural resources and no additional mitigation is required.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold b:	Whether the Project would conflict with existing zoning for agricultural use, or a Williamson Act contract

Impact AG-2 THE PROJECT WOULD NOT CONFLICT WITH EXISTING ZONING FOR AGRICULTURAL USE OR A WILLIAMSON ACT CONTRACT. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The Project site is zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size).

Solar Facility

Pending the discretionary approval of Unclassified Conditional Use Permit (CUP) Application No. 3555, the Solar Facility would be a permitted use on this site under Fresno County Zoning Code Section 853(B). The Project site is not subject to a Williamson Act contract and implementation of the Project would not conflict with any such contract. No impacts related to conflict with existing zoning for agricultural use or with a Williamson Act Contract would occur.

PG&E Improvements

Construction of the PG&E Improvements would result in the expansion of existing infrastructure. The portion of the Project site on which the PG&E Improvements would be made is designated AE-20 (Exclusive Agriculture) but is not subject to a Williamson Act Contract. The PG&E Improvements would be an allowable use under an existing CUP for the Tranquillity Switching Station. Therefore, the PG&E Improvements would result in no impacts related to conflict with existing zoning for agricultural use or with a Williamson Act contract.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to conflict with existing zoning for agricultural use or with a Williamson Act Contract and no additional mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold e:	Whether the Project would involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use

Impact AG-3 THE PROJECT WOULD NOT INVOLVE OTHER CHANGES IN THE EXISTING ENVIRONMENT, WHICH DUE TO THEIR LOCATION OR NATURE, COULD RESULT IN CONVERSION OF FARMLAND TO NON-AGRICULTURAL USE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The Solar Facility would not lead to changes in the existing environment that could cause the indirect conversion of off-site Farmland to non-agricultural use. The Solar Facility would be constructed within the boundaries of the site parcels, which would separate the proposed Project from off-site land uses. In accordance with General Plan Policy LU-A.13 and the Fresno County Solar Facility Guidelines, the proposed solar panels would be set back a minimum of 50 feet from neighboring agricultural operations. This requirement would be a standard condition of approval of the Unclassified Conditional Use Permit for the Solar Facility. The main access to the portion of the Solar Facility south of West Manning Avenue would be provided from West Manning Avenue at South Monterey Avenue. The main access to the portion of the Solar Facility north of West Manning Avenue would be provided from West Manning Avenue at San Benito Avenue. The Solar Facility would not include driveways accessing off-site areas or construction of new roadways through adjacent properties, nor would the Solar Facility induce indirect growth in the vicinity of the Project site, such as housing or commercial uses, that would preclude agricultural uses in off-site Farmlands. In addition, the physical buffer between the proposed development on the Solar Facility site and the property boundary, and designated access to the Solar Facility site would avoid indirect impacts that could affect surrounding agricultural land uses.

Additionally, the Fresno County Solar Facility Guidelines (2017) require that the Project Applicant record a Right-to-Farm Notice with the County recorder indicating that the Project Applicant is prepared to accept the adjacent normal agricultural operations during operation of the Solar Facility, and that the established agricultural operations shall not be considered a nuisance due to the changed condition of the Solar Facility site. As described in Section 2.14, *Other Required Permits and Commitments*, a Pest and Weed Management Plan would be implemented during construction, operation, and decommissioning to manage the introduction or establishment of rodents and/or weeds during the Project's initial demolition and construction, ongoing operation and maintenance, and final decommissioning and site restoration. Storm water and dust control measures such as the SWPPP and BMPs discussed in Section 2.11.1.5, *Erosion and Sediment Control and Pollution Prevention,* would be employed during all phases to manage erosion, sedimentation, and dust created by Project-related soil disturbance. These measures would ensure the Solar Facility would have a less-than-significant impact to soils on or surrounding the Solar Facility site. Furthermore, the Solar Facility would make no other changes to in the existing environment that would affect the defining characteristics of off-site Farmland, such as land use, soil quality, or water availability.

Therefore, the Solar Facility would not involve changes in the existing environment that could result in the conversion of Farmland to a non-agricultural use. Impacts would be less than significant.

PG&E Improvements

The PG&E Improvements would expand the existing infrastructure to support the proposed Project. Improvements would only accommodate the proposed Solar Facility and interconnect the 230 kV gen-tie line. Therefore, the PG&E Improvements would not involve other changes in the existing environment that could result in the conversion of Farmland to a non-agricultural use. Impacts would be less than significant. No mitigation would be required.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to conversion of agricultural resources and no additional mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.2.2.3 Cumulative Impacts

The scope for cumulative impacts to Agricultural Resources includes the entire County of Fresno. In 2016, approximately 1.17 million acres of land in Fresno County were classified as Farmland. Between 2014 and 2016, 20,143 acres of Farmland (1.72 percent) were converted to non-agricultural use (CDOC 2016a). Between 2000 and 2016, Fresno County's total Farmland was reduced by 58,330 net acres of Prime Farmland, 94,435 net acres of Farmland of Statewide Importance, and 9,321 net acres of Unique Farmland (CDOC 2016b). Additional development projects in the region could result in a significant cumulative impact to Farmland. As shown in Figure 3-1 and Table 3-1, Luna Valley Solar I (1,252 acres of PV facilities), Heartland 1 and 2 (1,384 and 1,116 acres of renewable energy facilities respectively), and Sonrisa Solar (1,700 acres of PV facilities) are cumulative projects proposed within 3 miles of the Project site that would also convert Farmland to non-agricultural uses.

The Farmland converted by the proposed Project (1,363 acres) would represent 0.1 percent of the farmland in Fresno County in 2016. In addition, all of the parcels in the Project footprint are part of Westlands Water District settlements that require a non-irrigation covenant upon transfer of ownership. Therefore, the future productivity of farmland on the Project site would be dependent entirely on rainfall. Furthermore, as described in Impact AG-1, the LESA model, which rates the quality of agricultural resources based on soil resource quality, the project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands, determined the agricultural resources on the Project site would be less than significant. The County of Fresno would apply a condition of approval which would require the Project Applicant to enter into a reclamation agreement, which would require on-site soils to be restored to current agricultural conditions (i.e., a LESA score of 57.27), allowing for resumed agricultural use after completion of the Project; therefore, the Project's contribution to cumulative impacts related to conversion of Farmland to non-agricultural use would not be cumulatively considerable. As described in Impact AG-3, construction, operation, and decommissioning of the Project would not result in indirect

impacts to adjacent and nearby agricultural operations and would not indirectly result in the permanent conversion of Farmland. Therefore, the Project's contribution to cumulative agricultural impacts would not be cumulatively considerable.

4.3 Air Quality

This section identifies and evaluates issues related to air quality in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methodology used to evaluate potential impacts, and the results of the impact analysis, as well as mitigation measures required to reduce impacts to less than significant levels. The analysis presented in this section is based in part on Project-specific air pollutant emissions modeling results included in Appendix D.

4.3.1 Setting

4.3.1.1 Environmental Setting

a. Topography and Meteorological Conditions

The Project site is located in the San Joaquin Valley Air Basin (Air Basin), which occupies the southern half of the Central Valley and comprises eight counties: San Joaquin, Stanislaus, Fresno, Merced, Madera, Kings, Tulare, and portions of Kern County. The Air Basin is approximately 250 miles long and 35 miles in width (on average) and is bordered by the Coast Range Mountains on the west, the Sierra Nevada mountains on the east, and the Tehachapi Mountains to the south. On the valley floor, the Air Basin is open only to the north, which heavily influences prevailing winds (San Joaquin Valley Air Pollution Control District [SJVAPCD] 2015a).

Although marine air generally flows into the Air Basin from the San Francisco Bay Area through the Carquinez Strait (a gap in the Coast Range Mountains) and low mountain passes such as Altamont Pass and Pacheco Pass, the mountain ranges restrict air movement through the Air Basin. Additionally, most of the surrounding mountains are above the normal height of summer inversion layers (1,500 to 3,000 feet). These topographic features result in weak airflow and poor dispersion of pollutants and as a result, the Air Basin is highly susceptible to pollutant accumulation.

The average daily maximum and minimum summer temperatures in unincorporated Fresno County are 96.4 degrees Fahrenheit (°F) and 63.6°F, respectively, and the average daily maximum and minimum winter temperatures are 56.2°F and 39.1°F, respectively. Average annual precipitation is 8.4 inches (Western Regional Climate Center [WRCC] 2018).

b. Air Pollutants of Concern

The U.S. Environmental Protection Agency (USEPA) has identified criteria air pollutants that are a threat to public health and welfare. These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare standards. Criteria pollutants that are a concern in the Air Basin are described below.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving precursor organic compounds (POC) and nitrogen oxides (NO_x). POC and NO_x are known as precursor compounds for ozone. Significant ozone production

generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of POC and NO_X under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with summertime temperature inversions[1] to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. Exposure to elevated ozone concentrations can cause eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is an air quality pollutant of concern because it acts as a respiratory irritant. NO_2 is a major component of the group of gaseous nitrogen compounds commonly referred to as NO_X. A precursor to ozone formation, NO_X is produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, NO_X emitted from fuel combustion is in the form of nitric oxide (NO) and NO_2. NO is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of the air on high pollution days, especially in conjunction with high ozone levels.

Carbon Monoxide

Carbon monoxide (CO) is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. 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. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease.

Particulate Matter

Particulate matter 10 microns or less in diameter (PM_{10}) and particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) can be inhaled into air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. According to a study

[1] Inversions occur when warm air sits over cooler air, trapping the cooler air at elevations near or above ground level. When these inversions occur in the Air Basin they trap pollutants from dispersing vertically while the mountains surrounding the San Joaquin Valley trap the pollutants from dispersing horizontally.

by the California Air Resources Board (CARB), exposure to ambient $PM_{2.5}$ can be associated with approximately 7,300 to 11,000 annual premature deaths statewide (CARB 2010). Particulates also can damage various materials and reduce visibility. Research has indicated that there are associations between increased levels of ambient particulate matter and increased adverse respiratory health. For PM_{10}, there are associations between particulate levels and decreased pulmonary function, increased number of asthma attacks, increased asthma medication usage, increased emergency room visits and hospital admissions for respiratory illness, and increased daily mortality (CARB 2004).

Other Criteria Pollutants

Sulfur dioxide (SO_2) is a combustion product of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (both PM_{10} and $PM_{2.5}$) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. Lead has a range of adverse neurotoxic health effects and was formerly released into the atmosphere primarily via the combustion of leaded gasoline. The use of leaded gasoline ceased in the United States after 1995, resulting in decreasing levels of atmospheric lead. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of ozone are referred to and regulated as reactive organic gases (ROGs). Sources of ROGs include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint. The primary health effects of ROGs result from the formation of ozone and its related health effects.

c. Existing Ambient Air Quality

The SJVAPCD operates a regional monitoring network that measures the ambient concentrations of criteria pollutants. Existing and probable future general levels of air quality in the Air Basin can normally be inferred from ambient air quality measurements conducted by SJVAPCD at its monitoring stations. The major criteria pollutants of concern in the Central Valley (i.e., ozone, PM_{10}, and $PM_{2.5}$) are monitored at several locations. Background ambient concentrations of pollutants are determined by pollutant emissions in a given area, as well as wind patterns and meteorological conditions for that area. As a result, background concentrations can vary among different locations within Fresno County. However, areas located close together and exposed to similar wind conditions can be expected to have similar background pollutant concentrations. The closest SJVAPCD monitoring station to the Project site is the Tranquillity station at 32650 West Adams Avenue, which is approximately 1.2 miles northwest of the Project site; it monitors ozone and $PM_{2.5}$. Table 4.3-1 shows a five-year summary of data collected at the Tranquillity station compared to National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), which are presented in more detail in Table 4.3-1. As of 2018 at the Tranquillity station, there were no exceedances of the state one-hour ozone standard since 2014. The state and national eight-hour ozone standards were exceeded for multiple days from 2014-2018. The national $PM_{2.5}$ 24-hour standard was also exceeded for multiple days from 2014-2018. The state annual average $PM_{2.5}$ standard was not exceeded during 2014-2018; however, annual average $PM_{2.5}$ values were not available for 2014. Because PM_{10} data is not available from the Tranquillity monitoring station, data for this pollutant has been taken from the next closest available monitoring station, the Fresno-Drummond Street monitoring station, located approximately 33 miles east of the Project site. As shown in Table 4.3-1, the PM_{10} state standards were exceeded for multiple days from 2014-2018.

Table 4.3-1 Air Quality Data Summary (2014-2018) Applicable to the Project Site

Pollutant	Standard	Monitoring Data by Year				
		2014	2015	2016	2017	2018
Ozone, O_3						
Highest 1-Hour Average, ppm		0.09	0.09	0.09	0.09	0.09
Days over State Standard	0.09 ppm	0	0	0	0	0
Highest 8-Hour Average, ppm		**0.08**	**0.08**	**0.08**	**0.08**	**0.08**
Days over State/National Standards [a]	0.070 ppm	11	11	21	10	7
Fine Particulate Matter, $PM_{2.5}$						
Highest 24-Hour Average, µg/m³		**46.0**	**50.9**	**39.7**	**62.4**	**39.7**
Days over National Standard [b]	35 µg/m³	– (3)	7.6 (7)	2.4 (2)	6.0 (6)	16.0 (16)
Annual Average, µg/m³		–	10.0	7.7	8.3	11.1
Exceed State/National Standards?	12 µg/m³	–	No	No	No	No
Respirable Particulate Matter, PM_{10}[c]						
Highest 24-Hour Average, µg/m³		**107.3**	**116.7**	**86.3**	**120.5**	**154.8**
Estimated days over State Standard [b, d]	50	108.9/ (16)	80.3/(13)	98.9/(17)	111.6/(17)	116.0/(19)
Annual Average, µg/m³		41.8	39.4	38.0	44.2	45.7
Exceed State Standard?	20 µg/m³	Yes	Yes	Yes	Yes	Yes

Generally, state and national standards are not to be exceeded more than once per year. Values in **bold** are in excess of applicable standard; ppm = parts per million; µg/m³ = micrograms per cubic meter; and "–" means there was insufficient data available to determine the value. All data were collected from the Tranquillity station located at 32650 West Adams Avenue unless otherwise noted.

[a] USEPA implemented a new eight-hour ozone standard of 70 ppb (or 0.070 ppm) in October 2015 that is consistent with the state standard. All listed exceedances are based on this standard.

[b] Measurements of $PM_{2.5}$ are usually collected every 1 to 3 days. Number of days exceeding the standards is a mathematical estimation of the number of days concentrations would be greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standards; a "—" indicates that there was not enough data for the mathematical estimation.

[c] PM_{10} data was not measured at the Tranquillity monitoring station, therefore presented data was collected from Fresno-Drummond Street monitoring station, located at 4706 East Drummond Avenue, Fresno, California. The numbers in parentheses are the measured number of samples that exceeded the standards.

[d] The California standard for the 24-hour average of PM_{10} is lower and more conservative than the national standard (150 µg/m³). Therefore, air quality data is compared to only the state standard in the above table.

Source: CARB 2020

d. Sensitive Receptors

Some receptors are considered 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 to be relatively sensitive to poor air quality because children, elderly people, and the infirmed 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 stay home for extended periods of time, with greater associated exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system. The SJVAPCD considers hospitals, schools, parks, playgrounds, daycare centers, nursing homes, convalescent facilities, and residential areas as sensitive receptor land uses (SJVAPCD 2015a).

The sensitive receptors with the highest potential to be affected by the Project include residential land uses located in the surrounding community within one mile (5,280 feet) of the Project site. While there are several agricultural properties adjacent to the Project site, there are four rural residences located within one mile of the Project site. The nearest sensitive receptors to the Project site include two rural residences located approximately 100 feet south and 350 feet south of the southwestern corner of the Project site boundary, respectively. Both residences are adjacent to SR 33.

4.3.1.2 Regulatory Setting

Criteria Air Pollutants

Regulation of air pollution is achieved through both national and state ambient air quality standards and emission limits for individual sources of air pollutants. As required by the federal Clean Air Act (CAA), the USEPA has identified criteria pollutants and has established NAAQS to protect public health and welfare. NAAQS have been established for ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The NAAQS are defined as the maximum acceptable concentration that may be reached, but not exceeded more than once per year. To protect human health and the environment, the USEPA has set "primary" and "secondary" maximum ambient standards for each of the criteria pollutants. Primary standards were set to protect human health, particularly sensitive individuals 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.

California has adopted more stringent ambient air quality standards for most of the criteria air pollutants. Table 4.3-2 presents both sets of ambient air quality standards (i.e., national and state) and the Air Basin's attainment status for each standard. California also has established state ambient air quality standards for sulfates, hydrogen sulfide, and vinyl chloride.

As required by the federal CAA and the California CAA, air basins or portions thereof have been classified as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether the standards have been achieved. The air quality in an attainment area meets or is better than the NAAQS or CAAQS. A non-attainment area has air quality that is worse than the NAAQS or CAAQS. As shown in Table 4.3-2, the Air Basin currently is classified as non-attainment for the one-hour state ozone standard as well as for the federal and state eight-hour ozone standards. The Air Basin also is designated as non-attainment for the state annual arithmetic mean and national 24-hour $PM_{2.5}$ standards. Additionally, the Air Basin is classified as non-attainment for the state 24-hour and annual arithmetic mean PM_{10} standards. The Air Basin is unclassified or classified as attainment for all other pollutants' standards (SJVAPCD 2020).

Table 4.3-2 Ambient Air Quality Standards and Air Basin Attainment Status

Pollutant	Averaging Time	State Standard		National Standard	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8-Hour 1-Hour	0.070 ppm 0.090 ppm	Nonattainment/ Severe Nonattainment	0.075 ppm –	Nonattainment/ Extreme*
Carbon Monoxide	1-Hour 8-Hour	9.0 ppm 20 ppm	Attainment/ Unclassified	9.0 ppm 35 ppm	Attainment/ Unclassified
Nitrogen Dioxide	1-Hour Annual	0.180 ppm 0.030 ppm	Attainment	0.100 ppm 0.053 ppm	Attainment/ Unclassified
Sulfur Dioxide	1-Hour 3-Hour 24-Hour Annual	0.25 ppm – 0.04 ppm –	Attainment	0.075 ppm 0.5 ppm0.14 ppm 0.03 ppm	Attainment/ Unclassified
Respirable Particulate Matter (PM_{10})	24-Hour Annual	50 μg/m³ 20 μg/m³	Nonattainment	150 μg/m³ –	Attainment
Fine Particulate Matter ($PM_{2.5}$)	24-Hour Annual	– 12 μg/m³	Nonattainment	35 μg/m³ 12 μg/m³	Nonattainment
Lead	30-Day Quarterly	1.5 μg/m³ –	Attainment	– 1.5 μg/m³	No Designation/ Classification

ppm = parts per million

ppb = parts per billion

μg/m³ = micrograms per cubic meter

* EPA approved reclassification to extreme nonattainment for the 8-hour ozone standard in 2010. There is no federal standard for 1-hour ozone effective June 15, 2005. Source: SJVAPCD 2020

Toxic Air Contaminants

The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources but does not directly regulate toxic air emissions. According to Section 39655 of the California Health and Safety Code, a toxic air contaminant (TAC) is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness or may pose a present or potential hazard to human health. For example, diesel combustion exhaust particulate matter (DPM) is a TAC (CARB 2015). Under the Act, TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings. Depending on the risk levels, emitting facilities are required to implement varying levels of risk reduction measures. The SJVAPCD implements AB 2588 through its Integrated Air Toxics Program and is responsible for prioritizing facilities that emit air toxics, reviewing health risk assessments, and implementing risk reduction procedure. Pursuant to the requirements of AB 2588, the SJVAPCD publishes an air toxics emissions inventory that details the TAC emissions of facilities throughout the Air Basin (SJVAPCD 2017a).

Federal

The USEPA is responsible for implementing the programs established under the federal CAA, such as developing and reviewing the NAAQS and judging the adequacy of State Implementation Plans

(SIPs), but has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

The 1970 CAA (last amended in 1990) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants are planned to be controlled in order to achieve all standards by the deadlines specified in the act.

State

CARB is responsible for establishing and reviewing the state standards; compiling the California SIP and securing approval of that plan from USEPA; conducting research and planning; and identifying TACs. CARB also regulates mobile sources of emissions in California, such as construction equipment, trucks, and automobiles, and oversees the activities of California's air quality management districts, which are organized at the county or regional level. Air quality management districts primarily are responsible for regulating stationary sources at industrial and commercial facilities within their geographic areas and for preparing the air quality plans that are required under the federal CAA and California CAA.

Although the federal CAA established NAAQS, individual states retained the option to adopt more stringent standards and to include other pollution sources. California already had established its own air quality standards when federal standards were established, and because of the unique meteorological problems in California, there is considerable diversity between the CAAQS and NAAQS, as shown in Table 4.3-2. California ambient standards are at least as protective as national ambient standards and often are more stringent. In 1988, California passed the California CAA (Health and Safety Code §39600 et seq.), which, like its federal counterpart, requires the designation of areas as attainment or non-attainment, but based these designations on state ambient air quality standards rather than the federal standards.

Employers have a legal obligation to control workers' exposure to hazardous materials. See, e.g., 8 Cal. Code Regs. Section 3203 (Injury and Illness Prevention), Section 5141 (Control of Harmful Exposures), and Section 5144 (Respiratory Protection). Employers also must "immediately report to the Division of Occupational Safety and Health (Cal/OSHA) any serious injury or illness, or death (including any due to Valley Fever)[2] of an employee occurring in a place of employment or in connection with any employment" (California Department of Industrial Relations 2017; 8 Cal. Code Regs. Section 342 [Reporting Work-Connected Fatalities and Serious Injuries]).

Regional

San Joaquin Valley Air Pollution Control District

The Project site is located within the jurisdiction of the SJVAPCD, which regulates air pollutant emissions for all sources throughout the Air Basin other than motor vehicles. The SJVAPCD enforces regulations and administers permits governing stationary sources. The following regional rules and regulations would apply to the Project:

- **Regulation VIII (Fugitive PM_{10} Prohibitions)** contains rules developed pursuant to USEPA guidance for "serious" PM_{10} nonattainment areas. Rules included under this regulation limit fugitive PM_{10} emissions from the following sources: construction, demolition, excavation, extraction and other earth moving activities, bulk materials handling, carryout and track-out,

[2] Valley Fever is discussed further in Section 4.9, *Hazards and Hazardous Materials*.

open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. Table 4.3-3 contains control measures that the Applicants would be required to implement during Project construction activities pursuant to Rule 8021, Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.

- **Rule 4101 (Visibility)** limits the visible plume from any source to 20 percent opacity.
- **Rule 4102 (Nuisance)** prohibits the discharge of air contaminants or other materials in quantities that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such person or the public.
- **Rule 4601 (Architectural Coatings)** limits volatile organic compound (VOC) emissions from architectural coatings. This rule specifies architectural coatings storage, cleanup, and labeling requirements.
- **Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations)** limits VOC emissions by restricting the application and manufacturing of certain types of asphalt for paving and maintenance operations and applies to the manufacture and use of cutback asphalt, slow cure asphalt, and emulsified asphalt for paving and maintenance operations.
- **Rule 9510 (Indirect Source Review)** requires certain development projects to mitigate exhaust emissions from construction equipment greater than 50 horsepower to 20 percent below statewide average NO_x emissions and 45 percent below statewide average PM_{10} exhaust emissions. This rule also requires applicants to reduce baseline emissions of NO_X and PM_{10} emissions associated with operations by 33.3 percent and 50 percent respectively over a period of 10 years (SJVAPCD 2017b).

In addition to reducing a portion of the development project's impact on air quality through compliance with District Rule 9510, a developer can further reduce the project's impact on air quality by entering into a "Voluntary Emission Reduction Agreement" (VERA) with the District to address mitigation requirements under CEQA. Under a VERA, the developer may fully mitigate project emission impacts by providing funds to the District, which then are used by the District to administer emission reduction projects on behalf of the project proponent (SJVAPCD 2015b).

Air Quality Management Plans

As required by the federal CAA and the California CAA, 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 also are required to prepare an air quality management plan (AQMP) that includes strategies for achieving attainment. The SJVAPCD has approved AQMPs demonstrating how the Air Basin will reach attainment with the federal one-hour and eight-hour ozone, PM_{10}, and $PM_{2.5}$ standards.

Table 4.3-3 SJVAPCD Rule 8021 Measures Applicable to the Project

No.	Measure
A.1	Pre-water site sufficient to limit visible dust emissions (VDE) to 20 percent opacity.
A.2	Phase work to reduce the amount of disturbed surface area at any one time.
B.1	Apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20 percent opacity; or
B.2	Construct and maintain wind barriers sufficient to limit VDE to 20 percent opacity. If using wind barriers, control measure B1 above shall also be implemented.
B.3	Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20 percent opacity and meet the conditions of a stabilized unpaved road surface.
C.1	Restrict vehicular access to the area.
C.2	Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acre or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a stabilized surface area as defined in section 3.58 of Rule 8011.
5.3.1	An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.
5.3.2	An owner/operator shall post speed limit signs that meet state and federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.
5.4.1	Cease outdoor construction, excavation, extraction, and other earthmoving activities that disturb the soil whenever VDE exceeds 20 percent opacity. Indoor activities such as electrical, plumbing, dry wall installation, painting, and any other activity that does not cause any disturbances to the soil are not subject to this requirement.
5.4.2	Continue operation of water trucks/devices when outdoor construction excavation, extraction, and other earthmoving activities cease, unless unsafe to do so.
6.3.1	An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer (APCO) prior to the start of any construction activity on any site that will include ten acres or more of disturbed surface area for residential developments, or five acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. Construction activities shall not commence until the APCO has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the APCO within 10 days prior to the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.
6.3.3	The Dust Control Plan shall describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity.
6.3.4	A Dust Control Plan shall contain all the [administrative] information described in Section 6.3.6 of this rule. The APCO shall approve, disapprove, or conditionally approve the Dust Control Plan within 30 days of plan submittal. A Dust Control Plan is deemed automatically approved if, after 30 days following receipt by the District, the District does not provide any comments to the owner/operator regarding the Dust Control Plan.

Source: SJVAPCD 2014

Ozone Attainment Plans

The *Extreme 1-Hour Ozone Attainment Demonstration Plan*, adopted by the SJVAPCD Governing Board October 8, 2004, sets forth measures and emission-reduction strategies designed to attain the federal one-hour ozone standard by November 15, 2010, as well as an emissions inventory, outreach, and rate of progress demonstration. This plan was approved by the USEPA on March 8, 2010; however, the USEPA's approval was subsequently withdrawn effective November 26, 2012, in response to a decision issued by the U.S. Court of Appeals for the Ninth Circuit (*Sierra Club v. EPA*, 671 F.3d 955) remanding USEPA's approval of these SIP revisions. Concurrent with the USEPA's final rule, CARB withdrew the 2004 plan. The SJVAPCD developed a new plan for the one-hour ozone standard, the *2013 Plan for the Revoked 1-Hour Ozone Standard*, which it adopted in September 2013.

The *2007 Ozone Plan*, approved by CARB on June 14, 2007, demonstrates how the Air Basin would meet the federal eight-hour ozone standard. The *2007 Ozone Plan* includes a comprehensive list of regulatory and incentive-based measures to reduce emissions of ozone and particulate matter precursors throughout the Air Basin. Additionally, this plan calls for major advancements in pollution control technologies for mobile and stationary sources of air pollution, and an increase in state and federal funding for incentive-based measures to create adequate reductions in emissions to bring the entire Air Basin into attainment with the federal eight-hour ozone standard (SJVAPCD 2007).

On April 16, 2009, the SJVAPCD Governing Board adopted the *Reasonably Available Control Technology Demonstration for Ozone State Implementation Plans (2009 RACT SIP)* (SJVAPCD 2009). In part, the *2009 RACT SIP* satisfied the commitment by the SJVAPCD for a new reasonably available control technology analysis for the one-hour ozone plan (see discussion of the EPA withdrawal of approval in the *Extreme 1-Hour Ozone Attainment Demonstration Plan* summary above) and was intended to prevent all sanctions that could be imposed by USEPA for failure to submit a required SIP revision for the one-hour ozone standard. With respect to the eight-hour standard, the plan also assesses the SJVAPCD's rules based on the adjusted major source definition of 10 tons per year (due to the Air Basin's designation as an extreme ozone nonattainment area), evaluates SJVAPCD rules against new *Control Techniques Guidelines* promulgated since August 2006, and reviews additional rules and amendments that had been adopted by the Governing Board since August 17, 2006, for reasonably available control technology consistency.

The *2013 Plan for the Revoked 1-Hour Ozone Standard* was approved by the Governing Board on September 19, 2013 (SJVAPCD 2013a). Based on implementation of the ongoing control measures, preliminary modeling indicates that the Basin will attain the one-hour ozone standard before the final attainment year of 2022 and without relying on long-term measures under the federal CAA Section 182(e)(5) (SJVAPCD 2013).

On June 19, 2014, the Governing Board adopted the *2014 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan* (SJVAPCD 2014) that includes a demonstration that the SJVAPCD rules implement RACT. The plan reviews each of the NO_x reduction rules and concludes that they satisfy requirements for stringency, applicability, and enforceability, and meet or exceed RACT. The plan's analysis of further ROG reductions through modeling and technical analyses demonstrates that added ROG reductions will not advance the Air Basin's ozone attainment. Each ROG rule evaluated in the 2009 RACT SIP has been subsequently approved by the USEPA as continuing to meet RACT in 2014. The ozone attainment strategy, therefore, focuses on further NO_x reductions.

SJVAPCD adopted the *2016 Ozone Plan* for the 2008 8-Hour Ozone Standard in June 2016. The *2016 Ozone Plan* included an analysis of relevant District rules, concluding that the District's rules meet RACT for all applicable rules. In 2018, USEPA approved this conclusion (USEPA 2018). This plan satisfies CAA requirements and ensures expeditious attainment of the 75 parts per billion eight-hour ozone standard (SJVAPCD 2016a).

Particulate Matter Attainment Plans

In June 2007, the SJVAPCD Board adopted the *2007 PM_{10} Maintenance Plan and Request for Redesignation*. This plan demonstrates how PM_{10} attainment in the Air Basin will be maintained in the future. Effective November 12, 2008, USEPA redesignated the Air Basin to attainment for the PM_{10} NAAQS and approved the 2007 PM_{10} Maintenance Plan (USEPA 2008). In April 2008, The Air Basin Board adopted the *2008 $PM_{2.5}$ Plan* and approved amendments to Chapter 6 of the 2008 $PM_{2.5}$ Plan on June 17, 2010 (SJVAPCD 2008). This plan was designed to addresses USEPA's annual $PM_{2.5}$ standard of 15 micrograms per cubic meter (µg/m³), which was established by EPA in 1997. In December of 2012, the SJVAPCD adopted the *2012 $PM_{2.5}$ Attainment Plan*, which addresses USEPA's 24-hour $PM_{2.5}$ standard of 35 µg/m³, which was established by USEPA in 2006 (SJVAPCD 2012). In April 2015, the SJVAPCD Board adopted the *2015 Plan for the 1997 $PM_{2.5}$ Standard* that addresses the EPA's annual and 24-hour $PM_{2.5}$ standards established in 1997 after the Air Basin experienced higher $PM_{2.5}$ levels in winter 2013–2014 due to the extreme drought, stagnation, strong inversions, and historically dry conditions, and the SJVAPCD was unable to meet the initial attainment date of December 31, 2015 (SJVAPCD 2015c).

SJVAPCD adopted the *2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard* on September 15, 2016. This plan addresses the EPA federal annual $PM_{2.5}$ standard of 12 µg/m^3, established in 2012. This plan includes an attainment impracticability demonstration and request for reclassification of the Valley from Moderate nonattainment to Serious nonattainment (SJVAPCD 2016b).

SJVAPCD is also in the process of developing an attainment strategy to address multiple $PM_{2.5}$ standards (1997, 2006, and 2012 $PM_{2.5}$ standards) and a plan to demonstrate maintenance of the 1987 PM_{10} standard as required under the federal CAA (SJVAPCD 2018).

Local

Fresno County General Plan

The Fresno County General Plan contains the following air quality policies aimed at reducing air emissions from development projects (Fresno County 2000):

- **Policy OS-G.1.** The County shall develop standard methods for determining and mitigating project air quality impacts and related thresholds of significance for use in environmental documents. The County will do this in conjunction with the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and the cities in Fresno County.
- **Policy OS-G.2.** The County shall ensure that air quality impacts identified during the CEQA review process are fairly and consistently mitigated. The County shall require projects to comply with the County's adopted air quality impact assessment and mitigation procedures.
- **Policy OS-G.13.** The County shall include fugitive dust control measures as a requirement for subdivision maps, site plans, and grading permits. This will assist in implementing the SJVUAPCD's particulate matter of less than ten (10) microns (PM_{10}) regulation (Regulation VIII). Enforcement actions can be coordinated with the Air District's Compliance Division.

- **Policy OS-G.14.** The County shall require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

4.3.2 Impact Analysis

4.3.2.1 Methodology and Significance Thresholds

a. Methodology

Methodology for Calculating Emissions

The construction, operational, and decommissioning emissions were estimated from several emissions models and associated spreadsheet calculations, depending on the source type and data availability. As discussed in the Project Description, for the purpose of CEQA analysis the Project is comprised of two major components: the Solar Facility and the PG&E Improvements. As such the analysis of the two components was analyzed and discussed separately. Combined impacts are discussed at the end of Section 4.3.2.3 and in 4.3.2.4, *Cumulative Impacts*. The primary emissions models used included CARB's on-road vehicle emission factor model EMFAC2014 and the off-road diesel equipment emissions analysis and inventory OFFROAD2017. Emission factors for fugitive dust generation from paved and unpaved roads and various construction activities such as bulldozing, grading, scraping, and compacting were obtained from Chapter 13.2 of the USEPA AP-42 *Compilation of Air Pollutant Emissions Factors* (USEPA 2011). Short-term and annual emissions were estimated using appropriate emission factors, the number of pieces of equipment, daily operating hours, and the associated schedules. Refer to Section 2, *Project Description*, for details on equipment fleet, hours of operation, vehicle miles traveled, construction schedule, and other assumptions used. The following construction and operational sources and activities were analyzed for emissions:

- On-site construction equipment exhaust emissions (all criteria pollutants) – based on EMFAC2014 and OFFROAD2017 emission factors and estimated equipment schedules
- On-site construction equipment fugitive dust emissions (PM_{10} and $PM_{2.5}$) – based on USEPA AP-42 emission factors and estimated equipment schedules
- On-site and off-site haul truck (includes delivery, freight, and dump/water trucks) exhaust emissions (all criteria pollutants) – based on EMFAC2014 and estimated vehicle miles traveled
- On-site and off-site entrained fugitive dust emissions for paved and unpaved road travel – based on AP-42 methodology and estimated vehicle miles traveled
- Worker vehicle emissions for trips to and from the site – based on EMFAC2014 and estimated vehicle miles traveled
- Worker vehicle entrained fugitive dust emissions for paved roads – based on AP-42 methodology and estimated vehicle miles traveled
- The EMFAC2014 model develops carbon dioxide (CO_2) and methane (CH_4) emission estimates. The California Climate Action Registry, January 2016, was used for on-road emissions of CH_4 and N_2O. These emissions results were used to calculate carbon dioxide equivalent (CO_2e).

It should be noted that the SJVAPCD requires the use of CalEEMod (California Emission Estimator Model) to determine compliance with the Indirect Source Rule (Rule 9510); however, that model is

designed to provide emissions quantification for typical residential and commercial land uses and is inadequate for the purposes of evaluating large scale solar power development projects. The methodology used herein uses the same emissions factors as those contained within the latest version of CalEEMod (version 2016.3.2).

Methodology for Determining Health Risks

Health impacts associated with TACs are generally associated with long-term exposure. Due to the minimal emissions expected on-site from routine maintenance and periodic PV panel washing activities, and off-site from employees commuting to the Project site each day, there are no meaningful sources of TACs for the operating phase of the Project and therefore no reason to expect health impacts related to TACs. As such, the greatest potential for TAC emissions would be during construction and decommissioning which may result in a short-term increase of TAC emissions. Because of the potential for health risks associated with large-scale off-road diesel equipment use during Project construction, a health risk analysis (HRA) was conducted regarding DPM. The significance threshold for health risks differs from that used for criteria pollutants in that no specific air quality standards have been established for DPM emissions or many other TACs. Instead, significance thresholds are determined based on an analysis of the number of excess cancer risks relative to a chosen risk level. Excess cancer risks are defined as those occurring in excess of those risks that would normally be associated with a location or activity in the absence of a project.

The SJVAPCD recommends a carcinogenic (cancer) risk threshold of 20 in a million. The Chronic Hazard Index (HIC) is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. The SJVAPCD recommends a HIC significance threshold of 1.0 and an acute hazard index (HIA) of 1.0. No short-term, acute relative exposure values are established and regulated, and, therefore, were not addressed in the HRA.

Exhaust emissions of DPM from the construction equipment are below the 10- and 2.5-micron range (PM_{10} and $PM_{2.5}$, respectively). DPM is the only pollutant needed for the cancer risk analysis since the cancer slope factor established by Office of Environmental Health Hazard Assessment (OEHHA) for the assessment of DPM cancer risk includes consideration of the individual toxic species that could be adsorbed onto DPM particles. The total PM_{10} exhaust emissions for all on-site diesel equipment for the entire construction period were divided by the construction working days to produce an average emission rate in terms of grams per second per square meter during operating hours. This was input into the AERMOD model to determine a concentration level in $\mu g/m^3$ at off-site sensitive receptors. Note that the concentration estimate developed using this methodology is not a specific prediction of the actual concentrations that would occur at any one point or any specific time over the course of the construction period. Actual concentrations are dependent on many variables, particularly the number and type of equipment working at specific distances during time periods of adverse meteorology. Various activities would occur at different locations throughout the Project site, and equipment would be close to adjacent receptors for a limited period of time, and then several miles from the same receptor at other times. Because of the variability in equipment location and timing of specific construction actions, the entire 4,089-acre site was input to AERMOD as two large area sources. The Project site was considered as two large area sources because there is vacant land in the middle of the Project site and it is not technically feasible within AERMOD to model an area source as a polygon with an excluded area within its boundaries. Emissions from construction trucks and equipment were assigned a release height of 3.1 meters, which is the approximate average height of the exhaust port plus a nominal amount of plume rise.

The air dispersion modeling for the HRA was performed using the USEPA AERMOD dispersion model, Version 18081. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (not a factor in this case). The AERMOD model requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. For this analysis, specific metrological data from the Lemoore Naval Air Station (Station ID: 23110), approximately 32 miles southeast of the Project site, was pre-processed with AERMET, Version 18081, prior to input into AERMOD. Emission rates were assumed to vary by the hour and the day; therefore, hourly average emissions rates were limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday. The model was run to obtain the maximum one-hour and average concentration across the five-year period included above in Table 4.3-1. In addition to the identified nearby sensitive receptors, a Cartesian grid that encompassed the Project site and surrounding one-mile area with 500-meter spacing was used to evaluate the Project's potential health impact. Additionally, receptors at the Project site's boundary were spaced every 25 meters.

A health risk computation was prepared to determine the potential risk based on average concentration at the highest exposed existing receptor. The chronic and carcinogenic health risk calculations were based on the standardized equations contained in the current Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2015). Toxicity values for the pollutants of concern were acquired from the OEHHA *Air Toxics Hot Spots Program Risk Assessment Guidelines* and *Inhalation RELs*[3] as of June 2016 (OEHHA 2015). The carcinogenic health risk equations follow a dose response relationship where the dosage is averaged over a particular timeframe. To provide a conservative analysis, the timeframe for construction and decommissioning activities were both set to two years and assumed to be equivalent. Only the risk associated with construction and decommissioning activities was assessed because operational emissions would not be significant.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would result in a significant impact if it would:

a. Conflict with or obstruct implementation of the applicable air quality plan;
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard;
c. Expose sensitive receptors to substantial pollutant concentrations; and/or
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The SJVAPCD recommends the use of quantitative thresholds to determine the significance of temporary construction-related pollutant emissions and project operations. These thresholds are shown in Table 4.3-4.

[3] OEHHA Reference Exposure Levels (RELs) are updated regularly at www.oehha.ca.gov/air/Allrels.html

Table 4.3-4 SJVAPCD Air Quality Significance Thresholds

Pollutant	Operation Thresholds (tpy)	Construction Thresholds (tpy)
NO_X	10	10
ROG[1]	10	10
PM_{10}	15	15
$PM_{2.5}$	15	15
SO_X	27	27
CO	100	100

tpy = tons per year
[1] Reactive Organic Gases (ROG) are formed during combustion and evaporation of organic solvents. ROG are also referred to as Volatile Organic Compounds (VOC).
Source: SJVAPCD 2015a

In addition to the annual SJVAPCD thresholds outlined above, SJVAPCD has published the *Ambient Air Quality Analysis Project Daily Emissions Assessment* guidance, which is summarized in Section 8.4.2, *Ambient Air Quality Screening Tools*, of the SJVAPCD's *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)*, adopted in March 2015. The *Ambient Air Quality Screening Tools* guidance provides a screening threshold of 100 pounds per day of any of the following pollutants: NO_X, ROG, PM_{10}, $PM_{2.5}$, SO_X, and CO. The screening threshold was used to evaluate construction activities and operational activities separately. Per SJVAPCD's GAMAQI, when assessing the significance of project-related impacts on air quality, the impacts *may* be significant if on-site emissions from construction or operational activities exceed the 100 pounds per day screening level after implementation of all enforceable mitigation measures. If the screening threshold is exceeded for any pollutant, an ambient air quality assessment (AAQA) is conducted following District Rule 2201 *AAQA Modeling* for any phase that has an exceedance. An AAQA uses air dispersion modeling to determine if emission increases from a project's construction or operational activities would cause or contribute to a violation of the ambient air quality. The results of the construction and operational AAQA for the Project are summarized in Section 4.3.2.2, *Project Impacts and Mitigation Measures*.

The Initial Study in Appendix A determined that the Project would result in no impacts with respect to creating other emissions such as odors that adversely affect a substantial number of people (Threshold d). Therefore, this issue is not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for an impact analysis discussion of Threshold d.

4.3.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the Project would conflict with or obstruct implementation of the applicable air quality plan
Threshold b:	Whether the Project would result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard

Impact AQ-1 THE PROJECT WOULD EXCEED SJVAPCD THRESHOLDS FOR EMISSIONS OF SOME CRITERIA AIR POLLUTANTS DURING CONSTRUCTION, OPERATION AND MAINTENANCE, AND DECOMMISSIONING, AND WOULD THEREFORE CONFLICT WITH SJVAPCD'S AIR QUALITY MANAGEMENT PLANS. HOWEVER, IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Construction, operation and maintenance, and decommissioning of the Project would result in emissions of criteria pollutants including ozone precursors, such as ROG and NO_X, as well as particulate matter (PM). The SJVAPCD has prepared several air quality attainment plans to achieve ozone and particulate matter standards, the most recent of which include the *2014 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan, 2013 Plan for the Revoked 1-Hour Ozone Standard, 2007 PM_{10} Maintenance Plan and Request for Re-designation, 2012 $PM_{2.5}$ Plan,* and *2015 Plan for the 1997 $PM_{2.5}$ Standard*. The Air Basin is in attainment for CO, SO_2, and lead, so there are no attainment plans for those pollutants. The SJVAPCD has determined that projects with emissions above the thresholds of significance for criteria pollutants would conflict with/obstruct implementation of the SJVAPCD's air quality plan (SJVAPCD 2015a). The preliminary ambient air quality impact assessment recommended by SJVAPCD in their GAMAQI is discussed below and followed by a discussion assessing the Project's air quality impacts in relation to SJVAPCD's project-level significance thresholds.

Unlike other impact discussions in this EIR that first evaluate Solar Facility impacts, then PG&E Improvement impacts, then the Project as a whole, this impact analysis is organized by evaluating the combined Project against the two SJVAPCD significance thresholds (i.e. annual and daily) because they involve different types of analysis. As such, this impact analysis is organized by first evaluating annual criteria air pollutant emissions generated during construction, operation and maintenance, and decommissioning by the Solar Facility, PG&E improvements, and the Project as a whole. Then the impact analysis evaluates the daily criteria air pollutant emissions generated during construction, operation and maintenance, and decommissioning of the Project as a whole. Because the Solar Facility and PG&E Improvements have an overlapping schedule for construction, operation and maintenance, and decommissioning, there will be days that include criteria air pollutant generating activities from both the Solar Facility and PG&E Improvements and it is most appropriate to evaluate the Solar Facility and PG&E Improvements together when comparing Project impacts to SJVAPCD's daily emissions threshold.

Annual Air Pollutant Emissions

Criteria air pollutant emissions generated during construction, operation and maintenance, and decommissioning of the Solar Facility, PG&E Improvements, and then Project as a whole are discussed below and compared to the SJVAPCD's established quantitative annual thresholds (see Table 4.3-4).

Solar Facility

CONSTRUCTION

Construction of the Solar Facility would require approximately 18 months of continuous construction involving several overlapping phases. Refer to Section 2, *Project Description*, for phasing specifics related to the solar PV system and the energy storage system. Solar Facility construction would generate air pollutant emissions from entrained dust, off-road equipment use, vehicle emissions, and architectural coatings. Off-site emissions would also be generated by construction worker daily commute trips and heavy-duty diesel haul and vendor truck trips. Construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. Table 4.3-5 shows the estimated emissions generated during Solar Facility construction by phase and construction year. Table 4.3-5 also shows the estimated emissions if fugitive dust were controlled with water or a dust palliative, which would be required by the County as a Condition of Approval for the Project.

The most substantial air contaminant emissions effect from construction of the Solar Facility would be the production of fugitive dust and NO_X during site preparation activities associated with Phase 1 of the PV system, which would occur over an expected maximum duration of 81 working days. The Solar Facility would comply with SJVAPCD Rule 8021 and Regulation VIII to control dust emissions generated during construction activities, which would be required as a condition of approval. As shown in Table 4.3-5,the typical use of water or other dust palliatives for fugitive dust control would substantially reduce the amount of fugitive dust particulate emissions. However, even with use of palliative controls, construction of the Solar Facility could generate more than 175 tons of PM_{10} over the 18-month construction duration, which would exceed the annual threshold of 15 tons. Similarly, construction would generate more than 45 tons of $PM_{2.5}$ during the 18 -month construction period, which would exceed the annual threshold of 15 tons. The emissions of NO_X from construction activities would also exceed the annual significance threshold during construction. Because PM_{10}, $PM_{2.5}$, and NO_X generated during construction of the Solar Facility would exceed SJVAPCD thresholds, impacts would be potentially significant and would require compliance with SJVAPCD Rule 9510, *Indirect Source Review*, which requires large development projects to reduce exhaust emissions from construction equipment by 20 percent for NO_X and 45 percent for PM_{10} compared to the statewide average. Compliance with SJVAPCD's Regulation VIII (Fugitive PM_{10} Prohibitions) [4] and Rule 9510 (Indirect Source Review)[5] would reduce NO_X, PM_{10}, and $PM_{2.5}$ emissions from the Project, but impacts would remain significant and mitigation would be required. No other criteria pollutants would exceed applicable thresholds, and impacts from such pollutants would be less than significant.

DECOMMISSIONING

Decommissioning activities for the Solar Facility would require approximately 24 months and consist of demolition activities, off-site transport of demolished material, worker commutes to/from the site, and use of demolition-related vehicles on-site. Similar to Solar Facility construction activities, decommissioning activities would generate PM_{10} emissions greater than the annual threshold currently established by SJVAPCD. Dust control with palliatives would reduce PM_{10} emissions below

[4] Regulation VIII requires visible dust emissions (VDE) to be limited to 20 percent opacity and comply with the conditions for a stabilized surface area when applicable. This regulation applies to any construction, demolition, excavation, extraction, and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on-site, and travel on access roads to and from the site.
[5] Rule 9510 requires the applicant to prepare an Air Impact Assessment (AIA) application no later than at the time when the final discretionary approval with the public agency is required. This analysis serves as an AIA for the project.

the annual threshold as shown in Table 4.3-5. No other criteria air pollutant (ROG, NO_X, CO, SO_X, or $PM_{2.5}$) thresholds would be exceeded during decommissioning.

Table 4.3-5 Solar Facility Construction and Decommissioning Emissions

Emission Type	Source	Total Emissions (tons)						With Water Control (tons)		With Palliative Control (tons)	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
PV Phase 1 - Site Prep											
Exhaust	On-site Construction and Mobile	4.8	43.6	0.05	56.7	2.0	1.8	2.0	1.8	2.0	1.8
	On-Road Vehicles	0.1	1.2	<0.1	2.1	0.1	0.1	0.1	0.1	0.1	0.1
Fugitive Dust[1]	On-site Construction and Mobile	–	–	–	–	189.7	36.7	120.3	29.7	84.7	26.2
	On-Road Vehicles	–	–	–	–	5.1	1.3	5.1	1.3	5.1	1.3
Subtotal PV Phase 1		**4.9**	**44.9**	**0.1**	**58.8**	**196.9**	**39.8**	**127.5**	**32.8**	**91.9**	**29.3**
Energy Storage Phase 1 - Site Prep											
Exhaust	On-site Construction and Mobile	0.6	5.1	0.01	10.4	0.4	0.2	0.4	0.2	0.4	0.2
	On-Road Vehicles	<0.1	0.2	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	33.3	4.1	16.3	2.4	7.8	1.5
	On-Road Vehicles	–	–	–	–	0.6	0.1	0.6	0.1	0.6	0.1
Subtotal ES Phase 1		**0.7**	**5.3**	**<0.1**	**10.8**	**34.3**	**4.4**	**17.4**	**2.7**	**8.8**	**1.8**
PV Phase 2 - PV Array Installation											
Exhaust	On-site Construction and Mobile	0.5	5.5	0.01	3.3	0.3	0.2	0.3	0.2	0.3	0.2
	On-Road Vehicles	0.2	3.0	0.05	8.0	0.7	0.3	0.7	0.3	0.7	0.3
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	177.61	17.8	79.9	8.0	28.4	2.8
	On-Road Vehicles	–	–	–	–	32.06	7.9	32.1	7.9	32.1	7.9
Subtotal PV Phase 2		**0.7**	**8.5**	**0.1**	**11.3**	**210.7**	**26.2**	**113.0**	**16.4**	**61.5**	**11.3**

Emission Type	Source	Total Emissions (tons)						With Water Control (tons)		With Palliative Control (tons)	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Energy Storage Phase 2 - Foundations, Structures, and DC Electrical System Installation											
Exhaust	On-site Construction and Mobile	0.2	2.6	<0.1	1.5	0.1	0.1	0.1	0.1	0.1	0.1
	On-Road Vehicles	0.0	0.4	<0.1	1.1	0.1	<0.1	0.1	<0.1	0.1	0.0
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	13.5	1.3	6.1	0.6	2.2	0.2
	On-Road Vehicles	–	–	–	–	2.3	0.6	2.3	0.6	2.3	0.6
Subtotal ES Phase 2		**0.2**	**3.0**	**0.0**	**2.6**	**16.0**	**2.1**	**8.6**	**1.3**	**4.7**	**0.9**
PV Phase 3 - Inverters and Substation											
Exhaust	On-site Construction and Mobile	0.5	5.6	<0.1	3.4	0.3	0.3	0.3	0.3	0.3	0.3
	On-Road Vehicles	0.0	0.4	<0.1	0.6	0.1	<0.1	0.1	<0.1	0.1	<0.1
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	19.3	1.9	8.7	0.9	3.1	0.3
	On-Road Vehicles	–	–	–	–	2.5	0.6	2.5	0.6	2.5	0.6
Subtotal PV Phase 3		**0.5**	**6.1**	**0.0**	**4.1**	**22.1**	**2.8**	**11.5**	**1.8**	**6.0**	**1.2**
Energy Storage Phase 3 - Inverters and Substation											
Exhaust	On-site Construction and Mobile	0.3	3.2	<0.1	2.0	0.2	0.2	0.2	0.2	0.2	0.2
	On-Road Vehicles	0.0	0.2	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	8.3	0.8	3.7	0.4	1.3	0.1
	On-Road Vehicles	–	–	–	–	1.6	0.4	1.6	0.4	1.6	0.4
Subtotal ES Phase 3		**0.3**	**3.4**	**0.0**	**2.4**	**10.0**	**1.4**	**5.5**	**0.9**	**3.1**	**0.7**
Solar Facility Construction Emissions (All Phases)		**7.4**	**71.2**	**0.1**	**90.0**	**490.0**	**76.7**	**283.4**	**56.0**	**175.9**	**45.2**
Construction Emissions Year 1 (tons) [2]		**5.2**	**48.5**	**0.1**	**62.4**	**216.3**	**42.3**	**137.8**	**34.4**	**97.5**	**30.4**
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	**Yes**	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Emission Type	Source	Total Emissions (tons)						With Water Control (tons)		With Palliative Control (tons)	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Construction Emissions Year 2 (tons)		**2.1**	**22.6**	**0.1**	**27.6**	**273.7**	**34.4**	**145.6**	**21.5**	**78.4**	**14.8**
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	**Yes**	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Solar Facility Decommissioning Emissions (tons)		**11.4**	**9.2**	**0.1**	**25.5**	**114.5**	**11.7**	**51.8**	**5.4**	**18.7**	**2.1**
Emissions per year		5.7	4.6	<0.1	12.8	57.2	5.9	25.9	2.7	9.3	1.1
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	No	No	No	**Yes**	No	**Yes**	No	No	No

PV = solar photovoltaic system; ES = energy storage system

Rounded values used; columns may not add up correctly. See Appendix D for calculations.

[1] Fugitive dust describes particulate matter that is emitted into the air due to earth moving activities or that has been re-suspended.

[2] Emissions by construction year are based on applicant construction schedule described in Section 2, *Project Description,* and construction starting on July 1, 2020 whereby Year 1 = all construction emission from the Project occurring in 2020 and Year 2 = all construction emission from the Project occurring in 2021

OPERATION AND MAINTENANCE

On-site emissions of criteria pollutants associated with Solar Facility operation and maintenance would be generated during routine maintenance and periodic PV panel washing activities associated with the Solar Facility. Off-site emissions would be generated by daily employee commute trips; the Project would be operated by eight permanent staff. Details of the emissions calculations are provided in Appendix D. Table 4.3-6 shows estimated air pollutant emissions associated with operation and maintenance of the Solar Facility.

As shown in Table 4.3-6 operation and maintenance of the Solar Facility would generate PM_{10} emissions in exceedance of the SJVAPCD annual significance threshold of 15 tons per year. No other criteria pollutant emissions threshold would be exceeded during operation and maintenance of the Solar Facility. Because PM_{10} emissions generated during operation of the Solar Facility would exceed the SJVAPCD significance thresholds, the project would result in a potentially significant impact and mitigation would be required.

Table 4.3-6 Solar Facility Operation and Maintenance Emissions Estimates

Emission Type	Source	Emissions (tons per year)					
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Exhaust	On-Road and On-Site Vehicles	0.3	1.0	<0.1	16.0	0.1	<0.2
Fugitive Dust[1]	On-Site Maintenance Vehicles	–	–	–	–	34.2	3.8
Total		**0.3**	**1.0**	**<0.1**	**16.0**	**34.3**	**3.8**
SJVAPCD Threshold		10	10	27	100	15	15
Exceed Threshold?		No	No	No	No	**Yes**	No

[1] Fugitive dust emissions associated with maintenance activities were calculated based on annual equipment usage, daily miles traveled, and the assumption that all on-site roads would be treated with either gravel or a dust palliative as specified in Section 2.12.4, *Operation Equipment*, and Section 2.9.5.6, *Access and Internal Circulation*.

PG&E Improvements

CONSTRUCTION

Construction of the PG&E Improvements would require approximately 6 months of continuous construction and would overlap with the Solar Facility. Refer to Section 2, *Project Description*, and Appendix N, *Traffic Impact Study*, for phasing specifics related to the PG&E Improvements and the overlap in timing with the solar PV system and the energy storage system. PG&E Improvement construction would generate air pollutant emissions from entrained dust, off-road equipment use, vehicle emissions, and architectural coatings. Off-site emissions would also be generated by construction worker daily commute trips and heavy-duty diesel haul and vendor truck trips. Construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. Table 4.3-7 shows the estimated emissions generated during PG&E Improvement construction. Table 4.3-7 also shows the estimated emissions if fugitive dust were controlled with water or a dust palliative. As shown in Table 4.3-7, construction of PG&E Improvements alone would not exceed any of the SJVAPCD criteria air pollutant (ROG, NO_X, CO, SO_X, PM_{10} and $PM_{2.5}$) thresholds and the impact is less than significant. Therefore, no additional mitigation would be required. All other impacts related to air quality would be similar, but reduced, compared with those described above for the Solar Facility.

DECOMMISSIONING

Decommissioning activities would consist of demolition of the PG&E Improvements, off-site transport of demolished material, worker commutes to/from the site, and use of demolition-related vehicles on-site. Similar to PG&E Improvements construction activities, decommissioning activities for the PG&E Improvements alone would not exceed any of the SJVAPCD criteria air pollutant (ROG, NO_X, CO, SO_X, PM_{10} and $PM_{2.5}$) thresholds and the impact is less than significant as shown in Table 4.3-7.

Table 4.3-7 PG&E Improvements Construction and Decommissioning Emissions

Emission Type	Source	Total Emissions (tons)						With Water Control (tons)		With Palliative Control (tons)	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
PG&E Improvements Phase 1 – Site Work											
Exhaust	On-site Construction and Mobile	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	On-Road Vehicles	<0.1	0.5	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	1.6	0.2	0.7	0.1	0.3	0.1
	On-Road Vehicles	–	–	–	–	0.6	0.1	0.6	0.1	0.6	0.1
Subtotal PG&E Improvements		**<0.1**	**0.7**	**<0.1**	**0.2**	**2.2**	**0.3**	**1.4**	**0.3**	**1.0**	**0.2**
PG&E Improvements Phase 2 – Electrical Work											
Exhaust	On-site Construction and Mobile	<0.1	0.4	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	On-Road Vehicles	<0.1	1.0	<0.1	0.2	0.1	<0.1	0.1	<0.1	0.1	<0.1
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	1.4	0.1	0.6	0.1	0.2	<0.1
	On-Road Vehicles	–	–	–	–	1.2	0.3	1.2	0.3	1.2	0.3
Subtotal PG&E Improvements		**0.1**	**1.4**	**<0.1**	**0.3**	**2.7**	**0.5**	**1.9**	**0.4**	**1.5**	**0.4**
PG&E Improvements Construction Emissions		**0.1**	**2.2**	**<0.1**	**0.6**	**4.9**	**0.8**	**3.3**	**0.7**	**2.5**	**0.6**
Construction Emissions Year 1 (tons) [2]		**<0.1**	**0.7**	**<0.1**	**0.2**	**2.2**	**0.3**	**1.4**	**0.3**	**1.0**	**0.2**
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	No	No	No	No	No	No	No	No	No
Construction Emissions Year 2 (tons)		**0.1**	**1.4**	**<0.1**	**0.3**	**2.7**	**0.5**	**1.9**	**0.4**	**1.5**	**0.4**
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	No	No	No	No	No	No	No	No	No

Emission Type	Source	Total Emissions (tons)						With Water Control (tons)		With Palliative Control (tons)	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
PG&E Improvements Decommissioning Emissions (tons)		**<0.1**	**<0.1**	**<0.1**	**0.1**	**0.2**	**<0.1**	**0.1**	**<0.1**	**<0.1**	**<0.1**
Emissions per year		<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	No	No	No	No	No	No	No	No	No

PV = solar photovoltaic system; ES = energy storage system

Rounded values used; columns may not add up correctly. See Appendix D for calculations.

[1] Fugitive dust describes particulate matter that is emitted into the air due to earth moving activities or that has been re-suspended.

[2] Emissions by construction year are based on applicant construction schedule described in Section 2, *Project Description,* and construction starting on July 1, 2020 whereby Year 1 = all construction emission from the Project occurring in 2020 and Year 2 = all construction emission from the Project occurring in 2021

OPERATION AND MAINTENANCE

As described in Section 2, *Project Description*, the PG&E Improvements would operate continuously once fully energized. Continuous or daily operations associated with the PG&E Improvements are primarily conducted remotely and therefore would generate negligible emissions. Maintenance, such as routine inspections, would occur on a regular basis in accordance with PG&E's maintenance program within the service area. Operation and maintenance of the PG&E Improvements would not require additional staff beyond the staff necessary for the operation and maintenance of the Solar Facility. As such, operation and maintenance of PG&E Improvements would have a reduced impact to air quality compared with those described above for the Solar Facility and the impact is less than significant.

Combined Project (Solar Facility and PG&E Improvements)

The following discussion details the combined air pollutant emissions from the Solar Facility and PG&E Improvements and compares the emissions to the SJVAPCD's established quantitative annual thresholds.

CONSTRUCTION

Construction of the Project would require approximately 18 months of continuous construction of the Solar Facility and 6 months of continuous construction of the PG&E Improvements. Construction phases of the Solar Facility and PG&E Improvements would overlap. Refer to Section 2, *Project Description*, and Appendix N, *Traffic Impact Study*, for phasing specifics related to the solar PV system, the energy storage system, and PG&E Improvements. Project construction would generate air pollutant emissions from entrained dust, off-road equipment use, vehicle emissions, and architectural coatings. Off-site emissions would also be generated by construction worker daily commute trips and heavy-duty diesel haul and vendor truck trips. Construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions.

The most substantial air contaminant emissions effect from construction of the Project as a whole, including the Solar Facility and the PG&E Improvements, is the production of fugitive dust and NO_X during site preparation activities associated with the Solar Facility. As discussed above, the Project

would comply with SJVAPCD Rule 8021 and Regulation VIII to control dust emissions generated during construction activities, which would be required as a condition of approval. As shown in Table 4.3-8, the typical use of water or other dust palliatives for fugitive dust control would substantially reduce the amount of fugitive dust particulate emissions. However, even with use of palliative controls, construction of the Project could generate more than 98 tons of PM_{10} during the first year of construction and approximately 80 tons of PM_{10} during the second year of construction, which would exceed the annual threshold of 15 tons. Similarly, construction of the Project would generate more than 30 tons of $PM_{2.5}$ during the first year of construction and more than 15 tons of $PM_{2.5}$ during the second year of construction, which would exceed the annual threshold of 15 tons. The emissions of NO_X from construction activities would also exceed the annual significance threshold during both year of construction.

Because PM_{10}, $PM_{2.5}$, and NO_X generated during construction of the Project would exceed SJVAPCD thresholds, impacts would be potentially significant and would require compliance with SJVAPCD Rule 9510, *Indirect Source Review*, which requires large development projects to reduce exhaust emissions from construction equipment by 20 percent for NO_X and 45 percent for PM_{10} compared to the statewide average. This is due to the activities associated with the construction of the Solar Facility. The construction activities associated with the PG&E Improvements alone do not exceed the SJVAPCD significance thresholds and therefore no additional mitigation is required. However, the Solar Facility in conjunction with the PG&E Improvements would result in combined significant effects to air quality and mitigation is required as described below for the Project as a whole (i.e. both the Solar Facility and the PG&E Improvements). No other criteria pollutants would exceed applicable thresholds, and impacts from such pollutants would be less than significant.

DECOMMISSIONING

Decommissioning activities would require approximately 24 months and consist of demolition of the Project, off-site transport of demolished material, worker commutes to/from the site, and use of demolition-related vehicles on-site. A majority of the emissions associated with decommissioning the Project are associated with the activities necessary to decommission the Solar Facility, which would generate PM_{10} emissions greater than the annual threshold currently established by SJVAPCD as shown in Table 4.3-5. As shown in Table 4.3-7, the decommissioning activities associated with the PG&E Improvements alone do not exceed the SJVAPCD significance thresholds and therefore no additional mitigation is required. However, the Solar Facility in conjunction with the PG&E Improvements would result in combined significant effects to air quality and mitigation is required as described below for the Project. Dust control with palliatives would reduce PM_{10} emissions below the threshold as shown in Table 4.3-8. No other criteria air pollutant (ROG, NO_X, CO, SO_X, or $PM_{2.5}$) thresholds would be exceeded during decommissioning.

Table 4.3-8 Project Construction and Decommissioning Emissions

Emission Type	Source	Total Emissions (tons)						With Water Control (tons)		With Palliative Control (tons)	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Solar Facility											
Exhaust	On-site Construction and Mobile	6.9	65.7	0.1	77.5	3.2	2.7	3.2	2.7	3.2	2.7
	On-Road Vehicles	0.4	5.5	0.1	12.5	1.0	0.4	1.0	0.4	1.0	0.4
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	441.6	62.6	235.0	41.9	127.5	31.2
	On-Road Vehicles	–	–	–	–	44.2	10.8	44.2	10.8	44.2	10.8
Subtotal Solar Facility		7.4	71.2	0.1	90.0	490.0	76.7	283.4	56.0	175.9	45.2
PG&E Improvements											
Exhaust	On-site Construction and Mobile	<0.1	0.6	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	On-Road Vehicles	<0.1	1.6	<0.1	0.3	0.1	<0.1	0.1	<0.1	0.1	<0.1
Fugitive Dust	On-site Construction and Mobile	–	–	–	–	3.0	0.3	1.4	0.2	0.6	0.1
	On-Road Vehicles	–	–	–	–	1.8	0.4	1.8	0.4	1.8	0.4
Subtotal PG&E Improvements		0.1	2.2	<0.1	0.6	4.9	0.8	3.3	0.7	2.5	0.6
Project Construction Emissions		**7.4**	**73.3**	**0.2**	**90.6**	**494.9**	**77.5**	**286.7**	**56.6**	**178.4**	**45.8**
Construction Emissions Year 1 (tons) [2]		**5.2**	**49.2**	**0.1**	**62.6**	**218.5**	**42.7**	**139.2**	**34.7**	**98.5**	**30.6**
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	**Yes**	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Construction Emissions Year 2 (tons)		**2.2**	**24.1**	**0.1**	**28.0**	**276.3**	**34.8**	**147.5**	**21.9**	**79.9**	**15.2**
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	**Yes**	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Emission Type	Source	Total Emissions (tons)						With Water Control (tons)		With Palliative Control (tons)	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Project Decommissioning Emissions (tons)		**11.4**	**9.2**	**0.1**	**25.7**	**114.7**	**11.7**	**51.9**	**5.5**	**18.7**	**2.1**
Emissions per year		5.7	4.6	0.0	12.8	57.3	5.9	25.9	2.7	9.4	1.1
SJVAPCD Tons/Year Threshold		10	10	27	100	15	15	15	15	15	15
Exceed Threshold?		No	No	No	No	**Yes**	No	**Yes**	No	No	No

PV = solar photovoltaic system; ES = energy storage system

Rounded values used; columns may not add up correctly. See Appendix D for calculations.

[1] Fugitive dust describes particulate matter that is emitted into the air due to earth moving activities or that has been re-suspended.

[2] Emissions by construction year are based on applicant construction schedule described in Section 2, *Project Description,* and construction starting on July 1, 2020 whereby Year 1 = all construction emission from the Project occurring in 2020 and Year 2 = all construction emission from the Project occurring in 2021

OPERATION AND MAINTENANCE

The Project would result in a direct generation of criteria pollutant emissions during operation and maintenance activities and an indirect reduction of emissions in the region. On-site emissions of criteria pollutants associated with Project operation and maintenance would be generated primarily during routine maintenance and periodic PV panel washing activities associated with the Solar Facility. Off-site emissions would be generated by daily employee commute trips; the Project would be operated by eight permanent staff. As discussed above, operation and maintenance of the PG&E Improvements would not require additional staff or activities beyond the staff and activities necessary for the operation and maintenance of the Solar Facility. As such, operation and maintenance emissions associated with the Project as a whole are the same as the emissions associated with operation of just the Solar Facility as shown in Table 4.3-6. Table 4.3-6 shows operation and maintenance of the Project would generate PM_{10} emissions in exceedance of the SJVAPCD annual significance threshold of 15 tons per year and therefore operational PM_{10} emissions would result in a potentially significant impact. No other criteria pollutant emissions threshold would be exceeded during operation and maintenance of the Project.

Because the operation of the Solar Facility in conjunction with the PG&E Improvements would result in combined significant effects to air quality and mitigation is required as described below for the Project. Compliance with SJVAPCD's Regulation VIII (Fugitive PM_{10} Prohibitions) [6] and Rule 9510 (Indirect Source Review)[7] and implementation of Mitigation Measure AQ-1 and Mitigation Measure AQ-2 during operation of the Project below would reduce PM_{10} emissions from the Project to less-than-significant levels. No other criteria pollutants would exceed applicable thresholds, and impacts from such pollutants would be less than significant.

[6] Regulation VIII requires visible dust emissions (VDE) to be limited to 20 percent opacity and comply with the conditions for a stabilized surface area when applicable. This regulation applies to any construction, demolition, excavation, extraction, and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on-site, and travel on access roads to and from the site.
[7] Rule 9510 requires the applicant to prepare an Air Impact Assessment (AIA) application no later than at the time when the final discretionary approval with the public agency is required. This analysis serves as an AIA for the project.

EMISSIONS DISPLACED DURING OPERATION OF THE PROJECT

The operation of the Project as a renewable energy source would indirectly cause the replacement of fossil fuel energy production facilities and thereby displace criteria pollutants created by existing power generation sources. The Project would generate a maximum of 400 MW of electricity at any given time. Over the 35-year lifespan of the Project, approximately 28,210 gigawatt-hours (GWh) of electricity would be produced, which equates to 806 GWh of electricity per year. Table 4.3-9 shows the criteria pollutant emissions that would be displaced by the Project. It is noted that this estimate only includes emissions generated by the combustion of fossil fuels and does not include operational employee trips associated with natural gas or coal combustion or the emissions associated with extracting and transporting those power sources. It is also noted that this estimate only includes the displacement of emissions from the portion of the California electricity market that comes from fossil fuels (approximately 70 percent of the market) and does not include displacement of emissions from the portion of the California electricity market generated by non-combustion sources (i.e., wind, solar, nuclear, hydro-electric) (CEC 2019). With the displaced emissions associated with the Project's operation, implementation of Mitigation Measure AQ-1 and compliance with Rule 9510, which requires operational activities to reduce baseline PM_{10} emissions by 50 percent over a period of 10 years, air pollutant impacts from the Project's operational activities would be less than significant.

Table 4.3-9 Criteria Pollutant Emissions Displaced by the Project

	Emissions					
	ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Emissions Displaced Annually (tons per year)	0.4	217.5	8.6	23.8	7.0	3.0
Total Emissions Displaced over 35-year Project Lifetime	14.6	7,613.6	299.8	833.7	243.6	104.8

Note: Refer to Appendix D for displacement calculations.

Daily Air Pollutant Emissions

Combined Project (Solar Facility and PG&E Improvements)

The Air Basin is a nonattainment area for ozone, PM_{10}, and $PM_{2.5}$ under the NAAQS and/or CAAQS. The current air quality in the Air Basin is the result of cumulative emissions from motor vehicles, off-road equipment, commercial and industrial facilities, and other emission sources. Projects that emit these pollutants or their precursors (e.g., ROG and NO_X for ozone) potentially contribute to poor air quality. Maximum daily emissions of criteria pollutants during Project construction would occur due to overlapping Solar Facility and PG&E Improvement construction phases and activities. As such, the potential maximum daily emissions of criteria pollutants from the Project as a whole (i.e. combined emissions from the Solar Facility and PG&E Improvements) was calculated and compared against SJVAPCD's screening threshold of 100 pounds per day. Based on the Project's construction schedule and activities, ROG, NO_X, CO, PM_{10} and $PM_{2.5}$ emissions have the potential to exceed SJVAPCD's recommended 100 pounds per day screening threshold during construction of the Project, as shown in as shown in Table 4.3-10. Per SJVAPCD's GAMAQI, if concentrations of ROG, NO_X, SO_X, CO, PM_{10}, or $PM_{2.5}$ exceed the screening threshold of 100 pounds per day, an AAQA should be conducted following District Rule 2201 AAQA Modeling. Because construction of the Solar Facility and PG&E Improvements involve overlapping phases that could result in an exceedance of the 100 pounds per

day screening threshold, an AAQA is required to assess construction and decommissioning activities and is discussed in detail in this section.

Table 4.3-10 Maximum Daily Project Construction Emissions

	Emissions (lbs/day)[1]					
	ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	185	1,626	1.9	2,424	5,169	1,087
Screening Threshold	100	100	100	100	100	100
Screening Threshold Exceeded?	**Yes**	**Yes**	No	**Yes**	**Yes**	**Yes**

lbs/day = pounds per day

[1] Per SJVAPCD GAMAQI emissions from construction activities after implementation of enforceable mitigation measures should be evaluated against the screening threshold. As such, represented PM_{10} and $PM_{2.5}$ emissions include implementation of Regulation VIII measures.

Additionally, during operation and maintenance of the Project, CO, and PM_{10} emissions would exceed 100 pounds per day as shown in Table 4.3-11.

Table 4.3-11 Maximum Daily Project Operational Emissions

	Emissions (lbs/day)[1]					
	ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	2.1	8.0	0.1	1,232.8	263.6	29.5
Screening Threshold	100	100	100	100	100	100
Screening Threshold Exceeded?	No	No	No	**Yes**	**Yes**	No

lbs/day = pounds per day

[1] Per SJVAPCD GAMAQI emissions from construction activities after implementation of enforceable mitigation measures should be evaluated against the screening threshold. As such, represented PM_{10} and $PM_{2.5}$ emissions include implementation of Regulation VIII measures.

CONSTRUCTION AND DECOMMISSIONING AMBIENT AIR QUALITY ASSESSMENT

As outlined by the SJVAPCD, an exceedance of the daily thresholds does not necessarily result in a significant impact; however, such an exceedance triggers the need for an AAQA. If the sum of the modeled pollutant concentration and the corresponding background concentration of each pollutant exceeds the CAAQS and/or NAAQS (listed in Table 4.3-2) at the property boundaries, the Project would violate air quality standards and contribute substantially to an existing or projected air quality violation (SJVAPCD 2015a). Average annual emissions were used as the basis for determining the Project's potential impact on ambient air quality. Maximum one-hour and average annual emissions of all criteria pollutants at the Project's property line during construction and decommissioning were determined via AERMOD. Criteria pollutant concentrations from the project phase that generate the highest level of criteria emissions per day were modeled at approximately 1,000 receptor points spaced 25 meters apart along the Project's property line and were compared to the CAAQS and NAAQS. Background concentrations for each pollutant were obtained from CARB's Air Quality and Meteorological Information (AQMIS) system for Fresno County using daily data for 2018. Because AQMIS does not report ROG concentrations, ozone concentrations were used as a surrogate for ROG (ROG is a precursor to ozone). Additionally, it was conservatively assumed that NO_2 is reflective of NO_X background concentrations (i.e., a complete conversion of

NO_X to NO_2). Ambient air concentrations of SO_2 are used as an indicator for SO_X, and therefore, are used interchangeably in this analysis. Appendix D contains detailed calculations and a summary of the AAQA undertaken to determine whether construction and decommissioning activities associated with the Project would cause or contribute to ambient air quality impacts. Due to the level of activity necessary for construction compared with decommissioning activities, construction activities generate more emissions than decommissioning activities as shown in Appendix D. Therefore, the AAQA was based on construction activities as this provides the most conservative assessment of construction or decommissioning activities. Table 4.3-12 shows the maximum concentration of each pollutant modeled at a property boundary receptor from Project construction activities in addition to the existing background concentration. As shown in Table 4.3-12, construction nor decommissioning activities of the Project would cause criteria pollutant concentrations of ROG, NO_X, SO_X, or CO at the Project's property line to exceed CAAQS or NAAQS. However, because the background concentration in the area for PM_{10} and $PM_{2.5}$ currently exceeds CAAQS and NAAQS, PM_{10} and $PM_{2.5}$ emissions from construction activities have the potential to contribute to the existing PM_{10} and $PM_{2.5}$ air quality violation.

Table 4.3-12 Project Construction Ambient Air Quality Assessment

	Emissions					
	ROG (ppm)	NO_X (ppm)	SO_X (ppm)	CO (ppm)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)
Background Emissions[1]	0.04	0.02	<0.01	0.4	46.3	24.2
Maximum Modeled Concentration[2]	<0.01	0.04	<0.01	0.1	9.7	1.4
Emissions Sum	0.04	0.06	<0.01	0.5	56.0	25.6
CAAQS[3]	0.09	0.180	0.25	9.0	20	12
Standard Exceeded?	No	No	No	No	Yes	Yes
NAAQS[3]	–	0.100	0.075	9.0	–	12
Standard Exceeded?	N/A	No	No	No	N/A	**Yes**

[1] Average background emissions were estimated using CARB's AQMIS daily maximum and minimum measured pollutant concentrations in Fresno County.

[2] For ROG, NO_X, SO_X, and CO, this is the maximum 1-hour modeled concentration at the property line. For PM_{10} and $PM_{2.5}$, this is the maximum period average modeled concentration at the property line. The averaging periods (i.e., maximum 1-hour average versus maximum period average) was selected to correspond with the available ambient air quality standards as recommended by SJVAPCD District Rule 2201 *AAQA Modeling*.

[3] The 1-hour standard CAAQS and NAAQS were used for ROG, NO_X, SO_X, and CO. In the absence of a 1-hour standard, such as for PM_{10} and $PM_{2.5}$, the annual average standard was used.

OPERATION AND MAINTENANCE AMBIENT AIR QUALITY ASSESSMENT

Table 4.3-13 shows the maximum concentration of each pollutant modeled at a property boundary receptor from Project operational activities in addition to the existing background concentration. Operational emissions of all criteria pollutants at the Project's property line are minimal and would not substantially contribute to an existing or projected air quality violation. Exceedance of PM_{10} and $PM_{2.5}$ CAAQS and NAAQS is due to background concentrations.

Table 4.3-13 Project Operational Ambient Air Quality Assessment

	Emissions					
	ROG (ppm)	NO_X (ppm)	SO_X (ppm)	CO (ppm)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)
Background Emissions[1]	0.04	0.02	<0.01	0.4	46.3	24.2
Maximum Modeled Concentration[2]	<0.01	<0.01	<0.001	0.01	1.4	0.1
Emissions Sum	0.04	0.02	<0.01	0.4	47.6	24.3
CAAQS[3]	0.09	0.180	0.25	9.0	20	12
Standard Exceeded?	No	No	No	No	Yes	Yes
NAAQS[3]	–	0.100	0.075	9.0	–	12
Standard Exceeded?	N/A	No	No	No	N/A	**Yes**

[1] Average background emissions were estimated using CARB's AQMIS daily maximum and minimum measured pollutant concentrations in Fresno County.

[2] For ROG, NO_X, SO_X and CO this is the maximum 1-hour modeled concentration at the property line. For PM_{10} and $PM_{2.5}$, this is the maximum period average modeled concentration at the property line. The averaging periods (i.e., maximum 1-hour average versus maximum period average) was selected to correspond with the available ambient air quality standards as recommended by SJVAPCD District Rule 2201 *AAQA Modeling*.

[3] The 1-hour standard CAAQS and NAAQS were used for ROG, NO_X, SO_X, and CO. In the absence of a 1-hour standard, such as for PM_{10} and $PM_{2.5}$, the annual average standard was used.

Mitigation Measures

The following mitigation measures are applicable to both the Solar Facility and the PG&E Improvements:

AQ-1 Air Quality Best Management Practices

During construction and decommissioning of the Project, the following measures shall be implemented:

- Ozone precursor emissions from mobile construction equipment shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturers' specifications. Equipment maintenance records and equipment design specification data sheets shall be kept onsite during construction.
- Electricity from power poles shall be used whenever practicable instead of temporary diesel- or gasoline-powered generators to reduce the associated emissions.
- Construction equipment will use only California-certified diesel or gasoline fuels
- The Applicant will use construction equipment that is at the Tier 4 interim emission level for equipment less than or equal to 81 horsepower and Tier 3 engines for all other equipment.

AQ-2 Further Reduction of NO_X, PM_{10}, and $PM_{2.5}$ Emissions During Construction, and Decommissioning and PM_{10} Emissions During Operation and Maintenance

Prior to issuance of construction/grading permits for the Project, the Project Applicant shall provide evidence to the County that Project construction and decommissioning emissions of NO_x, PM_{10}, and $PM_{2.5}$, and Project operation and maintenance emissions of PM_{10} would not exceed the SJVAPCD significance thresholds.

If the Project Applicant is unable to guarantee that Project construction and decommissioning emissions of NO_x, PM_{10}, and $PM_{2.5}$, and Project operation and maintenance emissions of PM_{10} would not exceed the SJVAPCD significance thresholds, the Project Applicant shall enter into a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD to mitigate or reduce project emissions beyond the requirements of Rule 9510 through the payment of fees (on a per-ton basis) to the SJVAPCD. The payment of fees shall be made to the SJVAPCD based on the fee schedule in the development mitigation contract and the amount of reduction necessary to offset project emissions below the SJVAPCD's thresholds. Prior to the issuance of construction/grading permits for the Project, the Project Applicant shall provide evidence to the County of a fully-executed VERA, should one be required.

Significance After Mitigation

With implementation of Mitigation Measure AQ-1 and Mitigation Measure AQ-2, impacts from criteria pollutant emissions from the Solar Facility and the Project as a whole would be reduced to less than significant levels.

Threshold c:	Whether the Project would expose sensitive receptors to substantial pollutant concentrations

Impact AQ-2 THE PROJECT WOULD NOT EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS DURING CONSTRUCTION, OPERATION AND MAINTENANCE, OR DECOMMISSIONING. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

As stated in Section 4.3.1, *Setting*, the closest sensitive receptors to the Project site are two rural residences located approximately 100 and 350 feet south of the Project site at the intersection of SR 33 and West Dinuba Avenue.

This impact analysis includes an evaluation of sensitive receptor exposure TACs, CO hotspots, and criteria pollutant levels. Unlike other impact discussions in this EIR that first evaluate Solar Facility impacts, then PG&E Improvement impacts, then the Project as a whole, impact analysis of health risk associated with exposure to TACs is evaluated based on TACs generated by the Project as a whole. This is because evaluation of health risk associated with TAC exposure is based on the total TAC exposure over the sensitive receptors' lifetime and the max hour of TAC exposure. A sensitive receptors' lifetime exposure to TACs is from TAC generation from the Project as a whole (i.e. both the Solar Facility and PG&E Improvements together). Further, because the Solar Facility and PG&E Improvements have an overlapping schedule for construction, operation and maintenance, and decommissioning, the max hour of TAC exposure would occur during overlapping activities from both the Solar Facility and PG&E Improvements. As such, it is most appropriate to evaluate the Solar Facility and PG&E Improvements together when comparing Project impacts to SJVAPCD's health risk significance threshold. Similar to other impact discussions in this EIR, evaluation of health risk associated with CO hotspots and exposure to criteria pollutants is evaluated first based on Solar Facility impacts, then PG&E Improvement impacts and then the Project as a whole.

Health Impacts of TACs from Project Construction

Construction of the Project, including the Solar Facility and PG&E Improvements, would require use of heavy-duty construction equipment and diesel trucks, which are subject to CARB Airborne Toxics Control Measures to reduce diesel particulate matter (DPM) emissions. Health risk is evaluated based on the total annual DPM emissions generated and the maximum hourly DPM emissions

generated. Because the construction activities of the Solar Facility and PG&E Improvements overlap, the annual DPM emissions generated and maximum hourly DPM emissions generated that contribute to health risk are based on the construction of the Project as a whole. As such, health risk due to DPM exposure from the Project as a whole was evaluated and discussed below. Note that evaluating a scenario in which the Solar Facility and PG&E Improvements occur simultaneously provides the most conservative health risk assessment.

Solar Facility and PG&E Improvements

Dispersion of Project DPM emissions modeled using the emissions data for PM_{10} exhaust emissions for the Project, including the Solar Facility and PG&E Improvements, are shown in Table 4.3-14. The highest modeled average DPM concentration of 0.07 µg/m^3 would occur on-site at a distance of 2,626 feet southwest from the center of the Project site modeled area. The highest average concentration at a sensitive receptor would be 0.005 µg/m^3 at the residence located approximately 100 feet south of the southwestern corner of the Project site boundary along SR 33. The actual concentration at any particular location in the vicinity of the Project site would vary as equipment and construction activity progresses through the Project site, and, actual concentrations at any particular time would vary substantially with meteorological conditions.

Chronic health risk is different from carcinogenic risk in that it considers impacts to the respiratory system, such as the buildup of material in the lungs and inflammation of lung tissue. The carcinogenic and non-carcinogenic health risks at the sensitive receptor with the highest concentration and risk levels are contained in Table 4.3-14 (refer to Appendix D for detailed health risk estimates). To assess the reasonable worst-case scenario, it was assumed that an individual could be exposed to the construction emissions as a child and decommissioning emissions as an adult 35 years later over the course of their 70-year lifetime. As indicated in the table, children are more affected by DPM emissions because of the relatively greater amount of air that they breathe on a daily basis as compared to their body weight than adults.

As shown in Table 4.3-14, sensitive receptor exposure to DPM associated with construction of the Solar Facility in conjunction with the PG&E Improvements would be less than significant and no mitigation would be required. This is in part because of the large area within which the construction would occur relative to the fixed location of the receptors. Further, results are considered conservative as the Project is anticipated to be constructed within 18 months; however, health risk was calculated assuming two years of exposure rather than 18 months. Additionally, although decommissioning emissions are expected to comprise only about 10 to 20 percent of construction emissions, the health impact related to future decommissioning activities was assumed to be equivalent to health impacts related to construction activity.

As DPM emissions modeled to evaluate health risk associated with Project construction are made up PM_{10} exhaust emissions from construction of the Solar Facility and construction of the PG&E Improvements, impacts from construction of the Solar Facility alone or PG&E Improvements alone would be to a lesser extent than the Project as a whole. Therefore, the impact conclusions would remain the same; the Solar Facility and the PG&E Improvements would result in a less than significant impact and no mitigation is required.

Table 4.3-14 Health Risks Associated with Diesel Particulate Emissions During Construction and Decommissioning of the Project

	Carcinogenic Risk by Age Group						Chronic Risk Hazard Quotient[3]
	3rd Trimester	0-2 Years	2-16 Years	16-30 Years	16-70 Years	Risk Sum[2]	
Construction Emissions (two years)							
Maximum Risk[1]	5.88E-08	1.42E-06	2.47E-07	3.75E-08	3.24E-08	1.48E-06	1.02E-03
Cancer Risk Criteria (per million)	**2.00E-05**						**1.0**
Exceed Criteria?	No	No	No	No	No	No	No
Construction and Deconstruction Emissions (four years in a 70-year lifetime)							
Maximum Risk[1]	5.88E-08	1.42E-06	2.47E-07	3.75E-08	3.24E-08	1.51E-06	1.02E-03	2.47E-07
Cancer Risk Criteria (per million)	**2.00E-05**							**1.0**
Exceed Criteria?	No	No	No	No	No	No	No	No

[1] Health risk is based on the maximum average DPM concentration = 5.08E-03 µg/m^3 at nearest existing residence. This includes DPM emissions from construction of both the Solar Facility and PG&E Improvements.

[2] Summed risk is based on the anticipated exposure duration due to the project and represents the maximum risk anticipated based on the risk across the most impacted age bins. Summed risk for construction includes the summation of risk at the 3rd trimester and risk from 0-2 years spanning a total of 2 years of exposure. Summed risk for construction and decommissioning includes summation of risk as a child (2 years from third trimester to 2 years) and as an adult 35 years later (i.e., age <35 years).

[3] Noncancer health impacts are determined by dividing the airborne concentration at the receptor by the appropriate Reference Exposure Level (REL) for that substance. A REL is defined as the concentration at which no adverse noncancer health effects are anticipated. Because noncancer health impacts are assessed as the ratio of airborne concentration versus the REL, the resulting hazard index is unitless.

Health Impacts of TACs from Project Operation and Maintenance

As previously discussed, health impacts due to DPM are largely related to construction equipment exhaust. Because limited construction equipment would be in use during operational activities for the Solar Facility and PG&E Improvements and the estimated PM_{10} emissions (i.e., DPM equivalent) related to exhaust emissions are minimal, health impacts from operational activities associated with the Project would be less than significant. Additionally, the Solar Facility in conjunction with the PG&E Improvements would not result in a significant impact due to operational activities.

Health Impacts of CO

Exposure to high concentrations of CO can result in dizziness, fatigue, chest pain, headaches, and impairment of central nervous system functions. The Air Basin is currently an attainment area for CO; however, there is a potential for the formation of microscale CO "hotspots" to occur immediately around points of congested traffic. Hotspots can form if such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles cold-started and operating at pollution-inefficient speeds, and/or is operating on roadways crowded with non-Project traffic.

The SJVAPCD GAMAQI states that a quantitative CO hotspots analysis be performed if either of the following two conditions exist: a traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the Project vicinity would be reduced to

LOS E or F,[8] or a traffic study indicates that the Project would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the Project vicinity.

Evaluation of health risk associated with CO hotspots and exposure to criteria pollutants is evaluated below for the Solar Facility impacts, then PG&E Improvement impacts, and then the Project as a whole.

Solar Facility

Results from the Traffic Impact Study prepared for the Project (Appendix N) showed that the LOS at the intersection of Manning Avenue and James Avenue would reduce from LOS B to LOS F during PM peak hours for approximately two months during the Solar Facility's construction phase (Appendix N). However, construction-related traffic congestion at the impacted intersection would be temporary. Further, the impacted intersection is more than one mile from any sensitive receptor. As such, the increase in traffic congestion at the intersection of Manning Avenue and James Avenue does not necessitate further analysis per the screening guidelines presented in *Transportation Project-Level Carbon Monoxide Protocol* (DOT 1997).

During operation, no CO hotspots would be created, as the Solar Facility is expected to generate few vehicle trips for maintenance personnel and the increase in traffic volume would be negligible. Therefore, a quantitative CO hotspots analysis is not required, and impacts to sensitive receptors with regard to potential CO hotspots resulting from the Solar Facility's contribution to cumulative traffic-related air quality impacts would be less than significant.

PG&E Improvements

Construction and operation of the PG&E Improvements would result in similar but lesser impacts on CO hotspots as the Solar Facility; therefore, all impacts described above are applicable to the PG&E Improvements. Although impacts of the PG&E Improvements would be less extensive than those for the Solar Facility, the impact conclusions would be the same. No CO hotspots would be created due to the PG&E Improvements.

Additionally, the Solar Facility in conjunction with the PG&E Improvements would not result in a significant impact due to generation of CO hotspots.

Health Impacts of Other Criteria Air Pollutants

Solar Facility

As discussed under Impact AQ-1, NO_X emissions, which are precursors to ozone, would exceed SJVAPCD significance thresholds during construction of the Solar Facility. Ozone and ozone precursor health impacts are associated with respiratory irritation and may be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, as discussed in the construction AAQA, NO_X emissions would not exceed CAAQS or NAAQ beyond the Project's property line. As such, NO_X exposure and associated health impacts that may be experienced by nearby sensitive receptors would be less than significant. Furthermore, construction would be short-term, lasting only 18 months, and the long-term operational emissions would not exceed significance thresholds for ozone precursors. Therefore, the Solar Facility would not result in significant health impacts related to NO_X emissions.

[8] Roadway operating conditions are evaluated with respect to level of service (LOS), defined by six grades (from A to F), with LOS A representing the best (freely flowing) traffic conditions and LOS F representing the worst (substantially congested) traffic conditions.

PM_{10} and $PM_{2.5}$ emissions associated with the construction, operation, and decommissioning of the Solar Facility would largely be due to the suspension of fugitive dust and would exceed SJVAPCD significance thresholds. Further, due to the background concentrations of PM_{10} and $PM_{2.5}$ emissions in the Project area, PM_{10} and $PM_{2.5}$ emissions due to construction activities would exceed the CAAQS and NAAQS at the Project's property line, potentially exposing nearby sensitive receptors to elevated PM_{10} and $PM_{2.5}$ concentrations during construction. Exposure to PM_{10} and $PM_{2.5}$ emissions could contribute to respiratory health impacts associated with inhaling particulate matter. However, compliance with Regulation VIII would substantially reduce fugitive dust emissions and limit impacts associated with inhaling dust. Further, as described previously in the operational AAQA, PM_{10} and $PM_{2.5}$ emissions during operational activities beyond the Project's property line would be minimal and would not significantly increase the existing PM_{10} or $PM_{2.5}$ air quality violation in the area. Therefore, the Solar Facility would result in less than significant health effects related to PM_{10} and $PM_{2.5}$ exposure.

PG&E Improvements

As discussed under Impact AQ-1, criteria air pollutant emissions associated with construction of the PG&E Improvements would not exceed SJVAPCD significance thresholds. Although Impacts of the PG&E Improvements would be less extensive than those for the Solar Facility, the impact conclusions would be the same. No significant health impacts related to criteria air pollutant emissions would result. Further, the Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects to air quality and no additional mitigation is required.

Mitigation Measure

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.3.2.3 Cumulative Impacts

The geographic scope considered for potential cumulative impacts to air quality is the Air Basin, which is governed by the SJVAPCD. The Air Basin currently is classified as non-attainment for the one-hour state ozone standard as well as for the federal and state eight-hour ozone standards. Additionally, the Air Basin is classified as non-attainment for the state 24-hour and annual arithmetic mean PM_{10} standards and the state annual arithmetic mean and national 24-hour $PM_{2.5}$ standards (SJVAPCD 2020). Therefore, there is an existing adverse cumulative effect in the Air Basin relative to these pollutants.

The contribution of a project's individual air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and future projects in the region also have or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions. The project-level thresholds for criteria air pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. While the Project would contribute to an increase in NO_x and

PM_{10}, with implementation of Mitigation Measure AQ-1, the Project's incremental contribution to the cumulative effect would not be considered cumulatively considerable. Additionally, as discussed above, the Project would not conflict with or obstruct implementation of the SJVAPCD's air quality plan. Therefore, Project construction and decommissioning, and operations and maintenance, would not result in a cumulatively considerable increase in emissions of nonattainment pollutants.

The SJVAPCD considers TAC emissions to be a localized issue. In general, TAC concentrations are typically highest near the emissions sources and decline with increased distance. The CARB recommends distances that should be incorporated when siting new sources or sensitive receptors near a source of TACs. This generally ranges from 500 to 1,000 feet depending on the source category (CAPCOA 2009). Therefore, in the absence of any specific guidance from the SJVAPCD, the potential cumulative impacts from TACs was analyzed based on a radius of 1,000 feet measured from the Project site boundary. The construction period of the Luna Valley Solar project, which includes approximately 1,252 acres of PV facilities, may overlap with the Project. However, the Luna Valley Solar project is approximately 1.5 miles west of the Project. As such, all the projects in the cumulative scenario would be well outside a 1,000-foot radius from the Project boundary and therefore there is no risk that the combined emissions would result in a cumulatively considerable impact to health risk.

As discussed under Impact AQ-2, construction and decommissioning-related traffic is not anticipated to create a CO hotspot, as construction would be short-term and the impacted intersection is more than one mile from any sensitive receptor. Therefore, impacts to sensitive receptors with regard to potential CO hotspots resulting from the Project's contribution to cumulative traffic-related air quality impacts would be less than significant.

4.4 Biological Resources

This section identifies and evaluates issues related to biological resources in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methodology used to evaluate potential impacts, and the results of the impact analysis, as well as mitigation measures required to reduce impacts to less than significant levels. The analysis presented in this section is based in part on the Project-specific Biological Resources Technical Report (BRTR; HELIX Environmental Planning, Inc. [HELIX] 2017) and the Project-specific Biological Resources Evaluation Letter Report (HELIX 2018a) included in Appendices E1 and E2, respectively.

The study areas for the above referenced reports did not include the portions of the Project site where the proposed PG&E Improvements and transmission lines would be situated or the proposed 230 kV generation tie-in (gen tie) from SR 33 west to the point of change of ownership. In this report, biological resources were assessed in these areas through a desktop review that included aerial photographs and other resources as described in Section 4.4.1.1.

4.4.1 Setting

4.4.1.1 Environmental Setting

a. Vegetation Communities

No naturally occurring vegetation communities occur on the Project site. Two human-made vegetation communities/land cover types occur in the Project site: Agriculture and Ruderal/Developed.

Agriculture

As described in the 2017 BRTR, the proposed Solar Facility site consists of only one vegetation community/land cover type: Agriculture. Based on examination of aerial imagery this land cover type also occurs on the portion of the Project site consisting of the 230kV gen tie from SR 33, west to the point of change of ownership. Because agricultural land is a man-made land cover, it is not described in *A Manual of California Vegetation* (Sawyer et al. 2009); therefore, vegetation alliances are not categorized. Agricultural activity across the Solar Facility site varies, and currently includes a range of active and fallow agricultural fields including row crops, small grain crops, and recently disked land bare of vegetation. Additional infrastructure is limited to dirt roads, field margins, and temporary ditches excavated to drain actively irrigated fields. During the 2018 assessment by HELIX, there was a marked increase in freshly disced areas or active alfalfa fields. Crops cultivated on the Solar Facility site include alfalfa, tomatoes, garlic, wheat, and barley. In areas left fallow, three invasive species occur commonly, including wild oat (*Avena fatua*), hare barley (*Hordeum murinum*), and Russian thistle (*Salsola tragus*). All three species are common in fallow agricultural fields throughout western Fresno County and in the San Joaquin Valley. Actively used dirt roads are graded and bare, while unused roads are mostly overgrown with the same vegetation found in the adjacent fallow fields.

Ruderal/Developed

Ruderal/developed is not described by Sawyer et al. (2009) as it is a man-made community/land cover type. The areas where the proposed PG&E Improvements and transmission line would be located are entirely within ruderal/developed areas. Developed areas consist of the existing PG&E Tranquillity Switching Station. This area is devoid of vegetation and contains equipment and facilities associated with the switching station. Ruderal areas consist of open space areas on the Tranquillity Switching Station property. The area is highly disturbed and, based on aerial imagery, is maintained through mowing and plowing type activities, ascertained by the presence of visible plow lines. Ruderal areas maintained in this fashion are expected to contain largely, if not completely, non-native annual plant species between maintenance events.

b. Drainages and Wetlands

The results of the wetland assessment conducted for the Project indicated no wetlands or natural drainages occur on site and only temporary drainage ditches associated with agricultural activities were present on site (HELIX 2017). These temporary ditches are excavated along the sides of most of the irrigated fields to collect agricultural tailwater. The ditches are manipulated as needed to perform normal agricultural practices and drain to off-site sumps; they have no hydrological connection to features in the region subject to regulation under the federal Clean Water Act, state Porter-Cologne Act, or California Fish and Game Code (CFGC) Section 1602.

Based on examination of the United States Geological Survey (USGS) National Hydrography Dataset (USGS 2018) no drainages or wetlands are mapped in the proposed PG&E Improvement area, nor the 230 kV gen tie portions of the Project site west of SR 33.

c. Special Status Species

For this analysis, special-status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the United States Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (FESA); those listed or proposed for listing, or candidates for listing as rare, threatened, or endangered by the California Department of Fish and Wildlife (CDFW) under the state Endangered Species Act; animals designated as “Fully Protected,” “Species of Special Concern,” “Rare,” or “Watch List” by CDFW; and those species on the Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2018b). This latter document includes species included in the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (HELIX 2018b) as updated. Those plants ranked as California Rare Plant Ranks 1 and 2 are considered special status species in this EIR, per the following definitions:

- Rank 1A = Plants presumed extinct in California
- Rank 1B = Rare or endangered in California and elsewhere; seriously endangered in California
- Rank 2A = Plants presumed extirpated in California but common elsewhere
- Rank 2B = Rare, threatened or endangered in California, but more common elsewhere

California Rare Plant Rank 1B and 2B plant species are regarded as rare, threatened, or endangered under CEQA and were considered as such in this document. California Rare Plant Rank 3 and 4 plant species are not considered for analysis under CEQA, except where they are designated as rare or otherwise protected by local governments or where cumulative impacts could result in population–level effects.

Queries of the following databases were conducted initially as part of preparation of the 2017 BRTR and were updated in 2018 (HELIX 2018a):

- USFWS Sacramento Office Updated Official list of threatened and endangered species that may occur in the Solar Facility site and/or may be affected by the Project (Dated April 20, 2018)
- Query of the CNPS Online Inventory of Rare and Endangered Plants of California, which included records from the *Cantua Creek, California* USGS 7.5-minute topographic quadrangle and the eight surrounding quadrangles (*Coit Ranch, Tranquillity, Jamesan, Levis, San Joaquin, Lillis Ranch, Tres Pecos Farms, and Westside*)
- Query of the CDFW California Natural Diversity Database (CNDDB) included occurrences of special-status species documented within 10 miles of the Solar Facility site (HELIX 2018c)

HELIX conducted biological surveys from 2016 through 2018 to evaluate the potential for special-status species to occur on the Solar Facility and proposed 230kV gen tie east of SR 33 (HELIX 2017, 2018a). The results of these queries and discussion of those special-status plant and wildlife species present or with potential to occur on the Solar Facility site are discussed below. Refer to Attachment C of the 2018 Biological Resources Evaluation Letter Report (HELIX 2018a) for potential for occurrence evaluations for those species determined to not occur on the Solar Facility site (Appendix E2).

Special Status Plant Species

Based on the database and literature review, 18 special status plant species documented in the *Cantua Creek, California* USGS 7.5-minute topographic quadrangle and the eight surrounding quadrangles were assessed for their potential to occur in the Solar Facility site (HELIX 2018a) (Appendix E2). None of the species were documented previously on the Solar Facility site (HELIX 2018c) or were observed during surveys (HELIX 2017, 2018a). The Solar Facility site does not contain natural vegetation communities, but consists of large areas of agricultural fields, previously developed areas and highly disturbed ruderal areas. As such, no special-status plant species were determined to have potential to occur on the site due to a lack of suitable habitat or suitable soils.

The Project site does not occur within designated critical habitat for any federally listed plant species and none occur within 10 miles of the Project site.

Special Status Wildlife Species

The Project site does not occur within designated critical habitat for any federally listed wildlife species. The nearest critical habitat is designated for the Fresno kangaroo rat (*Dipodomys nitratoides exilis*), approximately 10 miles northeast of the Project site.

Thirty-six special status animal species were reported to occur regionally, based on the database search and literature review (HELIX 2018a). Of these, 30 species were eliminated from further analysis due to negative results during protocol surveys, the absence of suitable habitat at the Solar Facility site, or the occurrence of the Solar Facility site outside of the species' known range. Additional focused protocol trapping efforts were conducted per the Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats (USFWS 2013), to determine if sensitive kangaroo rat species occur on site (HELIX 2017). The results of the focused trapping effort were negative for special-status kangaroo rat species and only the common Heermann's kangaroo rat (*Dipodomys heermanni*), house mouse (*Mus musculus*) and deer mouse (*Peromyscus maniculatus*) occur. Six species were either directly documented on site or in the vicinity during field surveys

conducted by HELIX from 2016 through 2018 or have a potential to occur based on the presence of suitable habitat.

Five special status animal species were observed within the Solar Facility site during focused surveys and reconnaissance surveys (HELIX 2017, 2018a) (Figure 4.4-1):

- Burrowing owl (*Athene cunicularia*) – CDFW Species of Special Concern
- Swainson's hawk (*Buteo swainsoni*) – State Threatened
- Northern harrier (*Circus cyaneus*) – CDFW Species of Special Concern
- California horned lark (*Eremophila alpestris actia*) – CDFW Watch List
- Loggerhead shrike (*Lanius ludovicianus*) – CDFW Species of Special Concern

The remaining species was determined to have a low potential to occur within the Solar Facility site based on the presence of marginally suitable habitat and taking into account species mobility:

- San Joaquin kit fox (*Vulpes macrotis mutica*) – federally endangered, state threatened

Discussion of each of the six species with potential to occur is presented below.

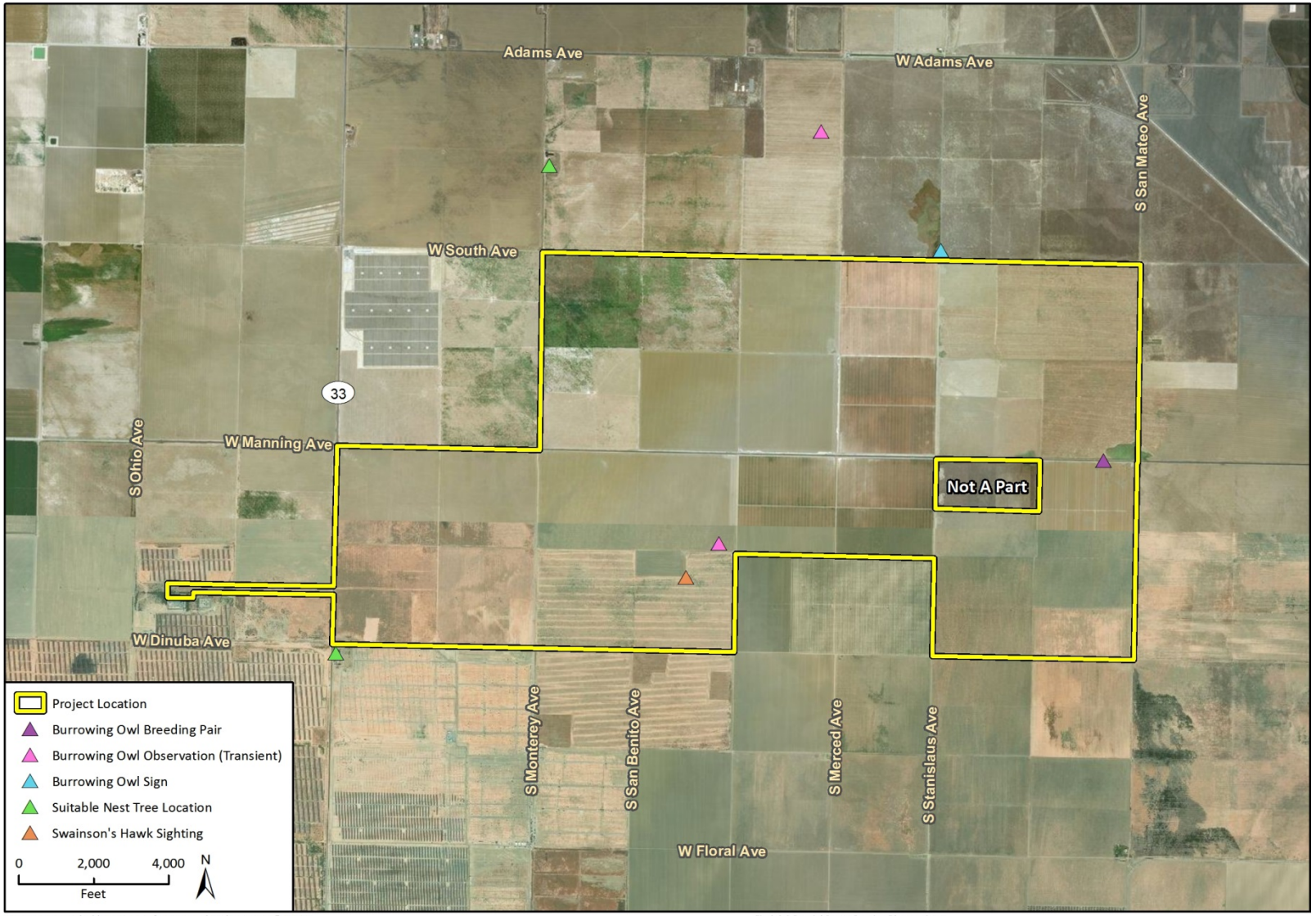
Burrowing Owl

Burrowing owl is a CDFW Species of Special Concern and is protected by special protocols. Burrowing owls are often found in open, dry grasslands, agricultural and range lands, disturbed areas, and desert habitats. Burrowing owls nest in burrows in the ground and commonly perch on fence posts or mounds near the burrow. The owls often use ground squirrel burrows or artificial burrows such as abandoned pipes or culverts.

In California, the burrowing owl occurs in the Central Valley, inner and outer coastal region, portions of the San Francisco Bay Area, southern California coast, from southern California to the Mexico border, the Imperial Valley and in portions of the desert and high desert habitats in southeastern and northeastern California. The nearest CNDDB-reported occurrence of burrowing owl is from canal banks along West Adams Avenue, approximately 1.5 miles east of the Project site. The occurrence consists of eight burrowing owls using burrows at this location in 2006; nesting was not confirmed at this location but can be assumed. Other CNDDB occurrence records in the region are from canal banks south of the Mendota Wildlife Area, approximately 5 miles northeast of the Project site where burrowing owls were observed nesting at multiple locations in the late 1980s and early 1990s.

A habitat assessment and protocol surveys for burrowing owl were conducted in 2016 and again in 2018 (HELIX 2018a). Transient burrowing owls and sign (whitewash, pellets) were observed on and adjacent to the Solar Facility site on multiple occasions (Figure 4.4-1). During surveys in 2018, a pair of adult burrowing owls and a juvenile were observed occupying a concrete culvert under Manning Avenue, approximately 300 feet west of San Mateo Avenue within the road right-of-way. The burrow was located outside of the proposed Project's perimeter fencing. Adults from this burrow were observed foraging in fallow fields in the Project site and immediately to the east, within 500 feet of the burrow location. No other burrowing owl or their sign indicating presence were observed anywhere in the Solar Facility site or adjacent lands within 200 meters.

Figure 4.4-1 Burrowing Owl and Swainson's Hawk Nest Tree Observations 2018



Imagery provided by Microsoft Bing and its licensors © 2018.

Fig 4.4-1 Special Status Species Observations

Most of the Solar Facility site provides potential foraging habitat for burrowing owl (HELIX 2018a). Disking and other soil disturbance associated with on-going agricultural activities currently limits the potential for this species to occupy the agricultural fields on the Solar Facility site, but potential habitat is present around the perimeter of fields or along roads and other uncultivated areas.

Swainson's Hawk

The Swainson's hawk, a state threatened species, is known to breed throughout the San Joaquin Valley. The typical breeding range of the species includes much of western North America, extending from Alaska to central Mexico. The species often nests in scattered trees associated with rural residences in proximity to open fields and grassland habitats. The Project site does not support suitable nesting habitat for Swainson's hawk, as it is treeless. Active and fallow agricultural fields provide suitable foraging habitat for Swainson's hawks nesting in nearby trees. Swainson's hawk Protocol Surveys conducted for the proposed Solar Facility in April, June, and July 2016 and 2018 found the nearest suitable nesting trees are a stand of eucalyptus surrounding a house at Dinuba Avenue and SR 33, adjacent to the southwest corner of the Solar Facility site (HELIX 2018a) (Figure 4.4-1). Other trees within 0.5 mile of the Solar Facility site are a stand of salt cedar (*Tamarix ramosissima*) on Monterey Avenue, 0.4 mile north of the site. No evidence of nesting by Swainson's hawk was observed in these trees. The entire Solar Facility site currently provides suitable foraging habitat for the species.

Northern Harrier

The northern harrier, a CDFW species of special concern, is known to breed in grassland habitats of the San Joaquin Valley with recorded breeding activity occurring at the Mendota Wildlife Area, approximately 8 miles northeast of the Project site. The typical breeding range of the species includes much of North America, extending from northern Alaska to northern Mexico. The species was observed on the Solar Facility site during 2016 and 2018 surveys (HELIX 2017, 2018a). Individuals were observed regularly near the center of the site and at the eastern edge foraging. No nests or nesting pairs were observed. Fallow agricultural fields in the Solar Facility site provide suitable foraging habitat for northern harrier. The Solar Facility site currently does not support patches of dense, tall, undisturbed vegetation suitable for nesting, but if fields are left fallow for long durations with no disturbance, there will be some potential for the species to utilize the site for nesting.

California Horned Lark

The California horned lark, a CDFW species of special concern, is known to breed in grassland habitats in the San Joaquin Valley, where the species is a year-round resident known to occupy a variety of habitats. A ground-nesting species, the California horned lark prefers to nest in open grassland and disturbed habitats, often on barren ground. The species was detected on the Solar Facility site during 2016 and 2018 surveys (HELIX 2018a). Individuals were seen along roads and in disturbed areas at the margins of fallow fields. Disturbed areas at the margins of fallow fields provide open, sparsely vegetated habitat suitable for horned lark nesting and foraging.

Loggerhead Shrike

The loggerhead shrike, a CDFW species of special concern, is known to occur year-round within the San Joaquin Valley. The species breeds throughout its range in California, with the exception of higher elevations within the Coast ranges, Sierra Nevada, southern Cascades, and Transverse Range.

The species was detected on the Solar Facility site during 2016 and 2018 surveys, near the center of the site and at the eastern edge (HELIX 2018a). Individuals along the eastern edge were associated with remnant patches of alkali sink scrub dominated by Mojave saltbush (*Atriplex spinifera*) and allscale (*Atriplex polycarpa*) located on off-site parcels. These thorny shrubs offer suitable nesting and perching habitat for Loggerhead shrike not available on the Solar Facility site, and shrikes were not observed more than a few hundred feet inside the Solar Facility site boundary.

San Joaquin Kit Fox

The San Joaquin kit fox, a federally endangered and state threatened species, is endemic to California west of the Sierra Nevada Mountains. The subspecies inhabits grasslands and scrublands within the San Joaquin Valley. San Joaquin kit foxes are active year-round and are generally nocturnal, but have periods of diurnal activity. Due to suitability of habitat for the species within the Solar Facility site and immediate vicinity, protocol-level surveys were conducted during 2016 (HELIX 2017). The protocol-level surveys did not detect the species within the Solar Facility site or immediate vicinity. The Solar Facility site contains no suitable dens and no sign of this species has been observed on the site during 2016 and 2018 surveys (HELIX 2018a).

The entire Solar Facility site, and all lands surrounding it south of Manning Avenue, are currently or recently active fields with no suitable burrows for San Joaquin kit fox (HELIX 2018a). Small mammal burrows are abundant around the margins of the Solar Facility site, north of Manning Avenue, but absent from the interior and edges of active agricultural fields. Frequent disking and field cultivation eliminates burrows and discourages occupancy by burrowing mammals. Although the Solar Facility site provides only marginal habitat for the species, and no individuals were documented during protocol surveys, the Project site is located within the geographic range of the species. The high mobility of this species allows for foraging and dispersal over many miles, and thus there is some potential for the species to occur.

d. Sensitive Natural Communities

Vegetation communities (as listed in the current Natural Communities List [CDFW 2018a]), defined as alliances with state ranks of S1 through S3, are considered imperiled, and thus, potentially of special concern. The CNDDB reports two sensitive natural communities (Coastal and Valley Freshwater Marsh and Valley Sink Scrub) within 10 miles of the Solar Facility site, but neither is present on site (HELIX 2017, 2018a). The Project site consists of agricultural and ruderal/developed land cover types, and thus, no vegetation communities with state rank S1 through S3, or otherwise designated as high priority or potentially rare in the current list, are present in the Project site.

Wildlife Movement Corridors

Wildlife movement corridors, or habitat linkages, are defined generally as connections between habitat patches that allow physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

Regionally, the Project site is not located in an Essential Connectivity Area (ECA) as mapped in California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California (Spencer et al. 2010). ECAs represent principal connections between natural landscape blocks. ECAs

are regions in which land conservation and management actions should be prioritized to maintain and enhance ecological connectivity. ECAs are mapped based on coarse ecological condition indicators, rather than on the needs of particular species; thus, they serve the majority of species in each region. The Project site does not provide any unique movement or dispersal habitat relative to the condition of the surrounding lands for several miles in all directions.

The Project site is partially in, and partially south of, a broad area defined as a "proposed area where connectivity and linkages should be promoted" in the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998). This area extends north to the Fresno-Merced county line and is a location for linkages between Ciervo-Panoche Hills area and the Fresno Slough-San Joaquin River corridor. The northern portion of the Project site is inside the extreme southern edge of this area, with the remainder of the site to the south of this proposed connectivity area.

The Project site is also located in the Pacific Flyway, a significant avian migration route. The Mendota Wildlife Area, approximately 8 miles northeast of the Project site, is a recognized stopover for migratory birds travelling the Pacific Flyway (CDFW 2014). Wetland and upland habitats comprise the Mendota Wildlife Area. In contrast, due to the highly disturbed conditions within the Project site and lack of native habitat, migratory bird species are not likely to use the site as a stopover location; however, they could still utilize the air space over the site as they travel (Helix 2020).

4.4.1.2 Regulatory Setting

Federal, state, and local authorities under a variety of statutes and guidelines share regulatory authority over biological resources. The primary authority under CEQA for general biological resources lies within the land use control and planning authority of local jurisdictions, which in this instance is the County of Fresno. The CDFW is a trustee agency for biological resources throughout the State under CEQA and also has direct jurisdiction under the CFGC, which jurisdiction includes, but is not limited to, resources protected by the State of California under the California Endangered Species Act (CESA). Below are discussions of the federal, state, and local regulations that form the regulatory basis for the impact analysis in Section 4.4.2.

a. Federal

Federal Endangered Species Act

Under FESA, authorization is required to "take" a listed species. Take is defined under FESA Section 3 as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation (50 Code of Federal Regulations Sections 17.3, 222.102); "harm" is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Critical habitat is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. FESA Section 7 outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat.

Section 7(a)(2) of FESA and its implementing regulations require federal agencies to consult with USFWS or National Marine Fisheries Service to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or

result in the destruction or adverse modification of critical habitat. For projects where federal action is not involved and take of a listed species may occur, the project applicant may seek to obtain an incidental take permit under FESA Section 10(a). Section 10(a) allows USFWS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan that includes components to minimize and mitigate impacts associated with the take.

The USFWS and National Marine Fisheries Service share responsibility and regulatory authority for implementing FESA (7 United States Code [USC] Section 136, 16 USC Section 1531 et seq.).

b. State

California Endangered Species Act (California Fish and Game Code Section 2050 et seq.)

CESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. 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. For projects that would affect a listed species under both CESA and FESA, compliance with the FESA would satisfy the CESA, if CDFW determines that the federal incidental take authorization is "consistent" with CESA under California Fish and Game Code Section 2080.1. Before a project results in take of a species listed under the CESA, a take permit must be issued under Section 2081(b).

California Fish and Game Code Sections 2080 and 2081

Section 2080 of the CFGC states, "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 Section 2081, 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.

California Fish and Game Code Sections 3511, 4700, 5050, and 5515

Protection of fully protected species is described in CFGC Sections 3511, 4700, 5050, and 5515. These statutes prohibit take or possession of fully protected species. Incidental take of fully protected species may be authorized under an approved Natural Community Conservation Plan.

Native Plant Protection Act (California Fish and Game Code Sections 1900-1913)

CDFW also has authority to administer the Native Plant Protection Act (NPPA; CFGC Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or

variety of native plant is endangered or rare. Under Section 1913(c) of the NPPA, the owner of land where a rare or endangered native plant is growing is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of the plant(s).

California Fish and Game Code Section 1600 et seq.

Section 1600 et seq. of the CFGC prohibits, without prior notification to CDFW, the substantial diversion or obstruction of the natural flow of, or substantial change or use any material from the bed, channel, or bank of, any river, stream, or lake, 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. For these activities to occur, CDFW must receive written notification regarding the activity in the manner prescribed by the department and may require a lake or streambed alteration agreement. Lakes, ponds, perennial and intermittent streams and associated riparian vegetation, when present, are subject to this regulation.

California State Fish and Game Code Sections 3503 and 3503.5

Under these sections of the CFGC, the project operator is not allowed to conduct activities that would result in the taking, possessing, or destroying of any birds of prey; 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 raptors or nongame birds protected by the MBTA; or the taking of any nongame bird pursuant to CFGC Section 3800.

CEQA Guidelines Section 15380

In addition to the protections provided 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 nonetheless may be considered rare or endangered for purposes of CEQA if the species can be shown to meet certain specified criteria. These criteria are modeled on the definition in FESA and CESA.

c. Local

Fresno County General Plan

The Fresno County General Plan (Fresno County 2000) outlines several policies intended to protect biological resources county-wide, including the following, which may apply to the Project:

- **Policy OS-E.1:** The County shall support efforts to avoid the “net” loss of important wildlife habitat where practicable. In cases where habitat loss cannot be avoided, the County shall impose adequate mitigation for the loss of wildlife habitat that is critical to supporting special-status species and/or other valuable or unique wildlife resources. Mitigation shall be at sufficient ratios to replace the function, and value of the habitat that was removed or degraded. Mitigation may be achieved through any combination of creation, restoration, conservation easements, and/or mitigation banking. Conservation easements should include provisions for maintenance and management in perpetuity. The County shall recommend coordination with the U.S. Fish and Wildlife Service and the California Department of Fish and Game to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed. Important habitat and habitat components include nesting, breeding, and foraging areas, important spawning grounds, migratory routes, migratory stopover areas, oak woodlands,

vernal pools, wildlife movement corridors, and other unique wildlife habitats (e.g., alkali scrub) critical to protecting and sustaining wildlife populations.

- **Policy OS-E.2:** The County shall require adequate buffer zones between construction activities and significant wildlife resources, including both on-site habitats that are purposely avoided and significant habitats that are adjacent to the project site, in order to avoid the degradation and disruption of critical life cycle activities such as breeding and feeding. The width of the buffer zone should vary depending on the location, species, etc. A final determination shall be made based on informal consultation with the U.S. Fish and Wildlife Service and/or the California Department of Fish and Game.
- **Policy OS-E.3:** The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the value of the habitat for wildlife is maintained.
- **Policy OS-E.4:** The County shall encourage private landowners to adopt sound wildlife habitat management practices, as recommended by the California Department of Fish and Game officials and the U.S. Fish and Wildlife Service.
- **Policy OS-E.6:** The County shall ensure the conservation of large, continuous expanses of native vegetation to provide suitable habitat for maintaining abundant and diverse wildlife populations, as long as this preservation does not threaten the economic well-being of the County.
- **Policy OS-E.9:** Prior to approval of discretionary development permits, the County shall require, as part of any required environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant resources and/or special-status plants or animals. Such evaluation will consider the potential for significant impact on these resources and will either identify feasible mitigation measures or indicate why mitigation is not feasible.
- **Policy OS-E.10:** The County shall support State and Federal programs to acquire significant fish and wildlife habitat areas for permanent protection and/or passive recreation use.
- **Policy OS-E.18:** The County should preserve, to the maximum possible extent, areas defined as habitats for rare or endangered animal and plant species in a natural state consistent with State and Federal endangered species laws.
- **Policy OS-E.19:** The County should preserve areas identified as habitats for rare or endangered plant and animal species primarily through the use of open space easements and appropriate zoning that restrict development in these sensitive areas.
- **Policy OS-F.5:** The County shall establish procedures for identifying and preserving rare, threatened, and endangered plant species that may be adversely affected by public or private development projects. The County shall require, as part of the environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based on field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant plant resources and/or special-status plant species. Such evaluation shall consider the potential for significant impact on these resources and shall either identify feasible mitigation measures or indicate why mitigation is not feasible.
- **Policy OS-F.7:** The County should encourage landowners to maintain natural vegetation or plant suitable vegetation along fence lines, drainage and irrigation ditches and on unused or marginal land for the benefit of wildlife.

4.4.2 Impact Analysis

4.4.2.1 Methodology and Significance Thresholds

a. Methodology

This analysis is based on information and impact analysis included in the biological reports prepared by HELIX (2017 and 2018a), as well as the information presented in Section 4.4.1, *Setting*, in the context of the proposed Project as described in Section 2, *Project Description*. Environmental impacts relative to biological resources may be assessed using impact significance criteria from federal, state, and local regulations. Project impacts to flora and fauna may be determined to be significant even if they do not directly affect rare, threatened, or endangered species.

Public Resources Code Section 21001(c) states it is the policy of the state of California to "prevent the elimination of fish and wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities." Environmental impacts relative to biological resources may be assessed using impact significance criteria encompassing CEQA Guidelines and federal, state, and local plans, regulations, and ordinances.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would result in a significant impact to biological resources if it would:

a. Have a substantial adverse effect, 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 CDFW or USFWS;
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
d. 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;
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

In addition, the following threshold in the Mandatory Findings of Significance section of the CEQA Guidelines is applicable to biological resources:

g. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal.

The Initial Study in Appendix A determined that the Project would result in no impact with respect to state and federally protected wetlands or drainages (threshold c) or conflicts with an adopted or approved habitat conservation plan (threshold f). Therefore, these issues are not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for an impact analysis discussion of these thresholds.

4.4.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the Project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local of regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service
Threshold g:	Whether the Project would have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal

Impact BIO-1 IMPLEMENTATION OF THE PROJECT HAS POTENTIAL TO HAVE A DIRECT OR INDIRECT ADVERSE EFFECT ON SPECIAL STATUS SPECIES. WITH IMPLEMENTATION OF MITIGATION MEASURES, IMPACTS WOULD BE AVOIDED, MINIMIZED, AND, IF NECESSARY, MITIGATED. IMPACTS WOULD THEREFORE BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Solar Facility and PG&E Improvements

Plant and Wildlife Habitat and Populations

Considering the Project site is currently in agricultural production and highly disturbed, it does not provide habitat for fish species and does not provide significant habitat for plants or other wildlife species compared to that of the region. Therefore, the Project would not substantially reduce the habitat of a fish or wildlife species, result in a fish or wildlife population to drop below self-sustaining levels, eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. No mitigation measures are required to address threshold g.

Solar Facility

Special Status Plants

Habitat types that could support special-status plants were not identified on-site (HELIX 2017, 2018a). Based on the lack of suitable habitats, the lack of suitable soils, and ongoing agricultural activities, no special-status plant species are expected to occur on site. Therefore, there would be no impacts to special-status plant species and no mitigation measures are required.

BURROWING OWL

Activities associated with construction and/or decommissioning of the Solar Facility could result in direct impacts to burrowing owl individuals occupying burrows in or adjacent to the Solar Facility site and/or indirect impacts as a result of habitat destruction or loss of burrows. Impacts could occur because of disturbance from construction activities in the vicinity of occupied burrows that could cause forced fledging or nest abandonment during the nesting season. Burrowing owls in burrows, and their eggs and young, could be killed or injured if hit or crushed by construction equipment (e.g., graders, scrapers, bulldozers, and trucks), or entombed in burrows by soil compaction. Chemicals, fuels, or lubricants spilled on the ground could result in fouling or poisoning of burrowing owls and their common prey species. Construction activities that could occur in the vicinity of occupied burrows would include access road construction, trenching for low-voltage collection lines, boring for support posts, installation of solar panel arrays, construction of the gen tie, and site decommissioning. These activities would be considered low-intensity impacts because the construction disturbance (noise, presence of equipment and personnel) would be comparable in nature to the agricultural practices in the region. Injury, mortality, and disturbance of burrows occupied by burrowing owl and loss of foraging habitat are potentially significant.

SWAINSON'S HAWK

Because there are no trees on the Project site, the proposed Solar Facility would not remove Swainson's hawk nesting habitat. There are two locations with trees suitable for Swainson's hawk nesting within a 0.5-mile radius of the site: the eucalyptus trees at Dinuba Avenue and SR 33 and the tamarisk trees north of South Avenue (HELIX 2018; Appendix E2). Due to existing human disturbances occurring within 0.25-mile of the site, construction, operation and maintenance, and decommissioning activities within 0.25 mile of suitable trees could potentially disturb nesting Swainson's hawk, if they were to use those trees. Disturbance leading to nest abandonment, forced fledging, or other harm of Swainson's hawk or nestlings would be a significant impact.

The proposed Project would result in conversion of approximately 4,089 acres of active agricultural land into a solar PV generating facility. In order to evaluate whether the removal of foraging habitat by the Solar Facility is significant, biologists conducted an analysis of impacts to Swainson's hawk foraging habitat (HELIX 2018; Appendix E2). The study utilized field observations, public and proprietary data, and desktop spatial analysis to estimate the acreage of suitable foraging habitat required to sustain the regional population of Swainson's hawk, which was determined to be 30 nesting pairs. The acreage of suitable foraging habitat required within 10 miles of the Project to support the regional population of Swainson's hawk was determined based upon the number of nesting pairs, average home range size (adjusted for variation in home range size), proportion of suitable habitat that is moderate or high quality and overlap between foraging habitat available within 10 miles and potential foraging area available to the regional population. The resultant value was subtracted from the total existing acreage of suitable foraging habitat within 10 miles to determine whether there would be a surplus (positive value) or deficit (negative value) of foraging habitat within 10 miles. The study determined that there was a surplus of 100,735 acres of suitable foraging habitat within 10 miles of the Project. Based on the analysis (2018; Appendix E2), the Project would result in removal of 4,089 acres of habitat and would reduce the surplus of Swainson's hawk foraging habitat regionally available to 96,646 acres, which is 95.9 percent of the existing surplus. The study defined the threshold of significance for loss of foraging habitat as a reduction of surplus foraging habitat to 70 percent or less of the existing surplus (in this case 70,514

acres), in order to account for variation in the estimates due to interannual variation in the regional population caused by mortality and recruitment, allow for resilience in the regional population to environmental factors outside the scope of this analysis, and to account for other potential sources of error. Therefore, potential impacts to the regional population of Swainson's hawk through foraging habitat loss is less than significant based on this definition, and no mitigation is required.

SAN JOAQUIN KIT FOX

No kit foxes or signs of kit foxes were observed in the Solar Facility site during protocol surveys in 2016 or on the adjacent Great Valley Solar (previously Tranquillity Solar) site during protocol surveys, pre-construction surveys, and construction monitoring (HELIX 2018a); however, San Joaquin kit fox is a highly mobile animal and is known to occur in the region. Therefore, potential exists for San Joaquin kit fox to be present on the Solar Facility site prior to commencement of the Project or to occur in the Solar Facility site during construction, operation and maintenance, and decommissioning. In the absence of proposed mitigation measures, the Project could adversely affect the San Joaquin kit fox through injury, mortality, or den destruction during ground disturbing activities, if present. Therefore, impacts are potentially significant.

MIGRATORY BIRDS, NON-LISTED NESTING BIRDS AND RAPTORS (INCLUDING CALIFORNIA HORNED LARK, LOGGERHEAD SHRIKE AND NORTHERN HARRIER)

The CDFW Species of Special Concern California horned lark, loggerhead shrike, and northern harrier were observed in the Solar Facility site during surveys conducted by HELIX. These species are all capable of nesting on the ground or in weedy vegetation or shrubs adjacent to the Solar Facility site. The Solar Facility site also provides nesting and foraging habitat for a variety of native birds common to the San Joaquin Valley such as western meadowlark (*Sturnella neglecta*), western kingbird (*Tyrannus verticalis*), mourning dove (*Zenaida macroura*), and savannah sparrow (*Passerculus sandwichensis*). Vegetation clearing or ground-disturbing activities could result in destruction of nests, eggs, or chicks of ground-nesting species during the typical avian breeding season (February 1 through September 15). In addition, vertical tubes, such as solar mount poles, chain link fencing poles, or any other hollow tubes or poles that would be expected to be installed during construction of the Project could entrap birds and cause injury and/or mortality. Although there are no trees on the Solar Facility site, they do occur adjacent to it. Electrical towers occur on and adjacent to the Solar Facility site that can provide potential nest sites for the red-tailed hawk (*Buteo jamaicensis*) and other raptors. Tree removals or demolition of existing transmission structures are not proposed and therefore Project activities are not expected to directly impact raptor nests. Project activities could result in noise and other disturbance with potential to cause nest failure. Therefore, impacts to special status nesting birds and raptors are potentially significant.

PG&E Improvements

The PG&E Improvements would require expansion of the existing Tranquillity Switching Station to the north by approximately 3 acres and the construction of a new 230 kV transmission line. The expansion would occur within the existing footprint of the Tranquillity Switching Station and existing PG&E easements for transmission structures. There are no sensitive vegetation communities which would be impacted by the proposed improvements. However, construction of the expansion and transmission line could impact the special status wildlife with the potential to occur in the area described above, as well as non-listed nesting birds and raptors. Therefore, impacts to special status wildlife and nesting birds and raptors from PG&E improvements are potentially significant.

Additionally, construction and operation of the Solar Facility in conjunction with the PG&E Improvements would not result in additional significant impacts to special status wildlife species or nesting birds and raptors beyond those discussed above.

Mitigation Measures

Mitigation Measures BIO-1(a) through Mitigation Measures BIO-1(s) are applicable to both the Solar Facility and the PG&E Improvements. Mitigation Measures BIO-1(t) and BIO-1(u) are also applicable to the Solar Facility.

BIO-1(a) Worker Environmental Awareness Program

Prior to initiation of construction activities (including staging and mobilization), operation and maintenance activities, and decommissioning, all personnel associated with Project construction shall attend Worker Environmental Awareness Program training, conducted by a qualified biologist, to aid workers in recognizing special-status resources that may occur in the Project area. The specifics of this program shall include identification of the sensitive species and habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information shall be prepared for distribution to all contractors, their employers, and other personnel involved with construction of the Project. All employees shall sign a form provided by the trainer documenting they have attended the training and understand the information presented to them.

BIO-1(b) Pre-Construction Nesting Bird Surveys and Impact Avoidance

If Project activities are scheduled to take place between September 16 through January 31, which is outside of the avian nesting season, no action would be required to protect nesting birds. If Project activities have been continuous since prior to February 1, no action would be required to protect nesting birds. If any Project activities that could harm birds or their nests (e.g., clearing temporary workspaces; staging or stockpiling machinery or supplies; parking vehicles, equipment, or trailers; grading or leveling; creating stockpiles of dirt or gravel; or any activity that could cover or remove existing habitat or disrupt surface soils) commence during the typical avian nesting season (February 1 through September 15), the following measures shall be implemented to avoid impacts on nesting raptors and other protected and common birds.

- No more than 14 days prior to initiation of such activities, a qualified biologist shall conduct a pre-construction survey to determine if birds or nests are present. The survey area shall include suitable nesting habitat within 300 feet of the Project boundary (inaccessible areas outside of the Project site can be surveyed from the site or from public roads using binoculars or spotting scopes). Surveys may be phased as construction is phased, so that each section is surveyed no more than 14 days prior to the start of construction in that area. If no active nests are identified, no further mitigation is required.
- If active nests are identified, a qualified biologist shall establish a no-disturbance buffer around the nests and no construction within the buffer shall be allowed until a qualified biologist determines that the nest is no longer active (i.e., the nestlings have fledged and are no longer reliant on the nest, or the nest has failed). The avoidance buffer size shall be determined based on species that is nesting, the status of the nest, site conditions, and level of anticipated Project activity in the vicinity of the nest. Encroachment into the buffer may occur at the discretion of a qualified biologist. Any encroachment into the buffer shall be monitored by a qualified biologist

to determine whether nesting birds exhibit any negative responses to the activity. The biologist shall have the authority to halt or redirect construction activities in order to protect nesting birds and to help ensure an impact to nesting birds is avoided.

BIO-1(c) Cap Hollow Tubes and Poles

Any vertical tubes (e.g., solar mount poles, chain link fencing poles, or any other hollow tubes or poles) used on the Project site shall be capped immediately after installation to avoid entrapment of birds.

BIO-1(d) Avoid Construction and Decommissioning Activities During the Burrowing Owl Nesting Season

Ground-disturbance activities associated with construction and decommissioning of the Project shall begin outside of the burrowing owl nesting season (February 1 through September 15), unless reasonably necessary to stay on schedule. The site shall be maintained in a manner inhospitable to burrowing owl, such as keeping the site free of vegetation and maintaining regular site disturbance by construction equipment and personnel.

BIO-1(e) Burrowing Owl Take Avoidance Survey

No more than 14 days prior to initiation of ground-disturbing activities associated with construction and decommissioning, a qualified biologist shall conduct a take avoidance survey of the Project site and surrounding areas to a distance of 150 meters, in accordance with the methods outlined in the CDFG *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). The pre-construction survey will cover all areas within 150 meters of the portion of the site in which construction/decommissioning is scheduled to start. Surveys will be phased, based on the construction/decommissioning schedule, such that they are conducted no more than 14 days before the start of ground disturbance in new areas. If construction/decommissioning activities in portions of the site cease for a period of 14 days, those portions of the site will be resurveyed for burrowing owls prior to the resumption of construction. If no occupied (breeding or wintering) burrowing owl burrows are identified, no further mitigation will be required.

BIO-1(f) Burrowing Owl Burrow Avoidance or Passive Relocation

If occupied burrows are identified on the site or within 150 meters of the Project disturbance area, one of the following actions shall be taken: (1) permanent avoidance of the burrow or (2) establishment of a temporary avoidance buffer followed by passive relocation and compensatory mitigation for loss of habitat in conjunction with the measures below:

1. Site-specific, no-disturbance buffer zones shall be established and maintained between Project activities and occupied burrows, using the distances recommended in the CDFW guidelines (CDFG 2012) or as otherwise determined appropriate by the qualified biologist in consultation with CDFW:
2. Avoidance of active burrows is preferrable, however if an occupied burrow cannot be avoided, and the burrow is not actively in use as a nest, the burrowing owls can be excluded from burrows in accordance with an approved Burrowing Owl Exclusion Plan, which shall be prepared and submitted for approval by CDFW prior to passive relocation of any burrowing owls. The Burrowing Owl Exclusion Plan shall be based on the recommendations made in the Staff Report on Burrowing Owl Mitigation and shall include the following information for each proposed passive relocation:

- Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species;
- Identification of type of scope to be used and appropriate timing of scoping;
- Occupancy factors to look for and what shall guide determination of vacancy and excavation timing;
- Methods for burrow excavation;
- Removal of other potential owl burrow surrogates or refugia on site;
- Methods for photographic documentation of the excavation and closure of the burrow;
- Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
- Methods for assuring the impacted site shall continually be made inhospitable to burrowing owls and fossorial mammals; and
- Method for compensatory mitigation for burrow loss.

3. If burrowing owls cannot be excluded from an off-site burrow and it is not feasible to maintain an avoidance buffer as stated above, coordination shall be conducted with CDFW to determine and implement appropriate measures to minimize impacts to off-site burrowing owls. Such measures could include, but are not limited to: 1) installation of barriers between the construction area and the occupied burrows to block noise and views of construction equipment and personnel, and 2) regular monitoring by a qualified biologist to determine if construction is resulting in disturbance of the owls that could lead to nest abandonment or harm to adult owls or their young. If such disturbance was occurring, the biological monitor would have the authority to halt construction until further modifications could be made to avoid disturbance of the owls.

BIO-1(g) Management of Permanent Avoidance Buffers

If permanent avoidance buffers are established on the Project site to protect burrowing owls, such areas shall be managed for the duration of the Project through decommissioning to preserve current values as foraging habitat for burrowing owl. Management shall include: 1) exclusion of all Project activities throughout the construction, operation, and decommissioning phases, including staging, parking, driving, or dumping; 2) vegetation management by grazing or mowing to preserve open, low-growing vegetation; 3) fencing to discourage human incursion; and 4) signs identifying the area as a biologically sensitive area managed for burrowing owl.

BIO-1(h) Swainson's Hawk Avoidance and Minimization

If Project construction or decommissioning is initiated during the Swainson's hawk nesting season (March 1 through September 15), a qualified biologist shall conduct a pre-construction Swainson's hawk and general raptor nest survey of all potential nesting habitat within 0.5-mile of the Project site. The survey shall be conducted according to current Swainson's hawk protocol (Swainson's Hawk Technical Advisory Committee 2000). If no active nests are identified, no further mitigation would be required. If active Swainson's hawk nests are identified an avoidance buffer of 0.5 mile shall be established around active nests consistent with the CDFW Staff Report (California Department of Fish and Game 1994). If active nests of non-listed raptors are identified, an appropriate avoidance buffer, as determined by the qualified biologist, shall be established. No construction within avoidance buffers shall be allowed until a qualified biologist has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the

nest). If it is not feasible to maintain a 0.5-mile buffer for an active Swainson's hawk nest to reasonably accommodate construction, maintenance, or decommissioning activities, the established buffer distance may be reduced through coordination with CDFW. Project activities within the reduced buffer shall be monitored at the discretion of a qualified biologist and based on coordination with CDFW.

BIO-1(i) Pre-Construction Survey for San Joaquin Kit Fox

A qualified biologist shall conduct a preconstruction survey no more than 14 days prior to the beginning of ground disturbance and/or construction or decommissioning activities, or any other Project activity likely to impact San Joaquin kit fox. This is to determine if San Joaquin kit fox dens are present in or within 500 feet of the Project site (inaccessible areas outside of the Project site can be surveyed using binoculars or spotting scopes from public roads). The surveys shall be conducted in all areas of suitable habitat for San Joaquin kit fox. Surveys shall be phased so that surveys occur within 14 days prior to disturbance of any portion of the site.

BIO-1(j) San Joaquin Kit Fox Den Avoidance

If potential dens are observed and avoidance of the dens is determined to be feasible by a qualified biologist in consultation with the Project Applicant and CDFW, the following minimum buffer distances shall be established prior to construction activities (consistent with USFWS standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance [USFWS 2011]):

- Potential den: 50 feet
- Atypical den: 50 feet
- Known den: 100 feet
- Natal/pupping den: at least 500 feet -USFWS must be contacted

If occupied San Joaquin kit fox dens are observed on the site, USFWS must be contacted. If avoidance of potential dens is not feasible, the following measures are required to avoid potential adverse effects to the San Joaquin kit fox:

1. If the qualified biologist determines that potential dens are inactive after monitoring the den per the USFWS Standard Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011), the biologist shall excavate these dens by hand with a shovel to prevent foxes from re-using them during construction.
2. If the qualified biologist determines that a potential non-natal den may be active, an on-site passive relocation program may be implemented with prior concurrence from the USFWS. This program shall consist of excluding San Joaquin kit foxes from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for one week to confirm usage has been discontinued and excavation and collapse of the burrow to prevent reoccupation. After the qualified biologist determines that the San Joaquin kit foxes have stopped using active dens within the Project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction with prior concurrence from USFWS.

BIO-1(k) Vehicle Speed Limits

On-site vehicles shall observe a daytime speed limit of 20 mph and a nighttime speed limit of 10 mph throughout the Project site, except on County roads and state and federal highways. Off-road traffic shall be prohibited outside of designated Project areas.

BIO-1(l) Hole and Trench Covering and Inspection for Kit Fox

To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of the Project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted.

BIO-1(m) Construction Pipe and Culvert Inspections for Kit Fox

All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

BIO-1(n) Trash Disposal

During construction, operations, and decommissioning, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the construction site or Project site.

BIO-1(o) Firearm Restrictions

No firearms shall be allowed on the Project site during construction, operations, and decommissioning.

BIO-1(p) Pet Restrictions

No pets, such as dogs or cats, shall be permitted on the Project site to prevent harassment, mortality of kit foxes, or destruction of dens during construction, operations, and decommissioning.

BIO-1(q) Rodenticide and Herbicide Restrictions

During construction, operations, and decommissioning, use of rodenticides and herbicides in Project areas shall be in compliance with the approved pest and weed management plan.

BIO-1(r) Notification of Kill or Injury of Kit Fox

During construction, operations, and decommissioning, a representative shall be appointed by the Project Applicant who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured, or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service.

Any contractor, employee, or military or agency personnel responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFW immediately in the case of a dead, injured, or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or the wildlife biologist at (530) 934-9309. The USFWS shall be contacted at Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, CA 95825, (916) 414-6620 or (916) 414-6600.

The Sacramento Fish and Wildlife Office and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during Project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information.

BIO-1(s) Reporting of Kit Fox Sighting

During construction, operations, and decommissioning, new sightings of kit fox shall be reported to the CNDDB. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the USFWS.

BIO-1(t) Site Restoration

Upon completion of the Project and decommissioning, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be re-contoured if necessary, and revegetated to promote restoration of the area to pre- Project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the Project, but after Project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas shall be in compliance with the approved Reclamation Plan.

BIO-1(u) Wildlife Fencing

Fencing of the Solar Facility Project site shall incorporate wildlife-friendly fencing design. Fencing plans may use one of several potential designs that would allow kit foxes to pass through the fence while still providing for Project security and exclusion of other unwanted species (e.g., domestic dogs and coyotes). Raised fences or fences with entry/exit points of at least 6 inches in diameter spaced along the bottom of the fence to allow species such as San Joaquin kit fox access into and through the Project site would be appropriate designs.

Significance After Mitigation

Implementation of Mitigation Measures BIO-1(a) through BIO-1(u), would reduce impacts to special status wildlife species to less than significant levels. Specifically, implementation of Mitigation Measures BIO-1(b) and BIO-1(c) would reduce impacts to migratory and nesting birds to less than significant. Implementation of BIO-1(a) through BIO-1(g) would reduce impacts to Burrowing owl to less than significant. Implementation of Mitigation Measures BIO-1(a), BIO-1(h) through BIO-1(u) would reduce impacts to San Joaquin Kit Fox to less than significant. Implementation of Mitigation Measures BIO-1(a) and BIO-1(h) would reduce impacts to Swainson’s Hawk to less than significant.

Threshold b:	Whether the Project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS

Impact BIO-2 THE PROJECT WOULD NOT BE LOCATED IN OR HAVE A SUBSTANTIAL ADVERSE EFFECT ON ANY RIPARIAN HABITAT OR OTHER IDENTIFIED SENSITIVE COMMUNITY. NO IMPACT WOULD OCCUR.

Solar Facility and PG&E Improvements

As noted in Sections 4.4.1.1.a and 4.4.1.1.d, the entire Project site consists of active and fallow agricultural land or ruderal/developed areas that support cultivated and/or ruderal non-native species, and riparian or other sensitive vegetation communities do not occur on or adjacent to the Project site. Therefore, neither the Solar Facility nor the PG&E Improvements would be in or have a substantial adverse effect on any riparian habitat or other identified sensitive community and no impact would occur. Further, the Solar Facility combined with the PG&E Improvements would have no impact on riparian habitat or other identified sensitive community and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

No impact would occur and no mitigation is required.

Threshold d:	Whether 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

Impact BIO-3 THE PROJECT HAS THE POTENTIAL TO SUBSTANTIALLY INTERFERE WITH THE LOCAL MOVEMENT OF WILDLIFE AND MIGRATORY BIRDS ON THE PROJECT SITE AS A RESULT OF IMPLEMENTATION OF THE PROJECT. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

As discussed in Section 4.4.1, *Setting*, no wildlife nurseries were identified on the Project site. Impacts to wildlife nurseries would be less than significant.

The Project site is not included in any corridors mapped by the California Essential Habitat Connectivity Project and does not provide any unique movement or dispersal habitat relative to surrounding lands for several miles in all directions (HELIX 2017). The Project site is partially inside and south of a broad area defined as a "proposed area where connectivity and linkages should be promoted" in the Recovery Plan for Upland Species of the San Joaquin Valley, California (HELIX 2017). This area extends north to the Fresno – Merced county line and is intended as a location for linkages between the Ciervo-Panoche Hills area and the Fresno Slough – San Joaquin River corridor. The northern portion of the Project site is inside the extreme southern edge of this area and the remainder of the site is outside it to the south. Given the broad extent of this area, and the peripheral location of the Project site, the Project would not significantly constrain future establishment of regional wildlife movement corridors in this larger area.

As discussed in Section 4.4.1, *Setting*, the Project site is located in the vicinity of the Pacific Flyway, an avian migration route. The Mendota Wildlife Area, approximately 4 miles northeast of the Project site, is a recognized stopover for migratory birds travelling along the Pacific Flyway.

Solar Facility

The Solar Facility would introduce new collision and electrocution hazards to the site, including new transmission lines with which special status avian species, raptors, and migratory birds may come in contact. Over the operational life of the proposed Solar Facility, this impact is potentially significant.

The Solar Facility site and a portion of surrounding lands currently provide extensive open, un-fenced dispersal habitat for wildlife movement for species such as the San Joaquin kit fox. Fencing the Solar Facility site could potentially interfere with movement and predator avoidance for local wildlife on the Solar Facility site (Helix 2017; Appendix E1). This impact to small scale-local terrestrial wildlife movement on the Solar Facility site is potentially significant.

PG&E Improvements

The PG&E improvements would involve an expansion of an existing facility within the already constructed Tranquillity Switching Station and would continue to be surrounded with wildlife-proof fencing. Therefore, the PG&E improvements would not impact the movement of wildlife. However, the improvements would also involve the construction of a new transmission line which would introduce new collision and electrocution hazards to the site in the vicinity of the Pacific Flyway. Therefore, the PG&E Improvements would result in potentially significant impacts to migratory birds.

Additionally, construction and operation of the Solar Facility in conjunction with the PG&E Improvements would not result in additional significant impacts to migratory birds beyond those discussed above.

Mitigation Measures

Implementation of Mitigation Measure BIO-1(u) would increase the permeability of the Project post-construction and would address potential local effects to small-scale local terrestrial wildlife movement on the Solar Facility site.

In addition, Mitigation Measures BIO-3(a) and BIO-3(b) would be required for the Solar Facility and the PG&E Improvements and would reduce interference to movement of avian species in the area.

BIO-3(a) Avian/Power Line Collision Avoidance and Minimization

Construction of the gen-tie transmission line shall include installation of bird flight diverters, in accordance with the applicable measures of the most recent Avian Power Line Interaction Committee (APLIC) guidelines for minimizing avian collisions (Reducing Avian Collisions with Power Lines; APLIC 2012). Details of design components shall be indicated on all construction plans and be provided and approved by the County prior to construction. The applicant shall monitor for new versions of the APLIC collision guidelines and update designs or implement new measures as needed during Project construction, provided these actions do not require the purchase of previously ordered transmission line structures. Once constructed, all bird flight diverters shall be maintained for the duration of construction and operation.

BIO-3(b) Avian Electrocution Avoidance and Minimization

The applicant shall design, construct, and maintain all transmission facilities, towers, poles, and lines in accordance with applicable policies set forth in the most recent APLIC Avian Protection Plan Guidelines for minimizing avian electrocutions (APLIC 2006). Details of design components shall be

indicated on all construction plans and shall be approved by County prior to construction. The Applicant shall monitor for new versions of the APLIC guidelines and update designs or implement new measures as needed during Project construction.

Significance After Mitigation

With implementation of Mitigation Measures BIO-1(u), BIO-3(a), and BIO-3(b), impacts to wildlife movement corridors and nursery sites for native resident or migratory fish or wildlife species would be reduced to less than significant levels.

Threshold e:	Whether the Project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

Impact BIO-4 THE PROJECT HAS THE POTENTIAL TO CONFLICT WITH LOCAL POLICIES PROTECTING BIOLOGICAL RESOURCES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Solar Facility

The Fresno County General Plan includes several policies intended to promote conservation of existing high-value biological resources in the county and assure no net loss of sensitive resources and special-status species. The Project area has been subject to a long history of intensive agricultural land use and disturbance that has severely reduced the biological value of the site compared to undisturbed natural habitats. Impact BIO-1 describes impacts to special status species, and includes mitigation measures to minimize impacts to special status species. Therefore, with implementation of Mitigation Measures BIO-1(a) through BIO-1(u), BIO-3(a), and BIO-3(b), the Project would not conflict with local policies and ordinances protecting biological resources and no additional mitigation is required.

PG&E Improvements

Similar to the proposed Solar Facility, PG&E improvements would be subject to mitigation measures to minimize impacts to special status species, including Mitigation Measures BIO-1(a) through BIO-1(s), BIO-3(a), and BIO-3(b). With the implementation of these mitigation measures, the PG&E improvements would not conflict with local policies and ordinances protecting biological resources and no additional mitigation is required.

Additionally, construction and operation of the Solar Facility in conjunction with the PG&E Improvements would not result in additional significant impacts related to conflict with local policies and ordinances protecting biological resources beyond those discussed above.

Mitigation Measures

No additional mitigation beyond Mitigation Measures BIO-1(a) through BIO-1(u) for the Solar Facility, Mitigation Measures BIO-1(a) through BIO-1(s) for the PG&E Improvements, and BIO-3(a), and BIO-3(b) for both the Solar Facility and PG&E Improvements are required.

Significance After Mitigation

With implementation of Mitigation Measures BIO-1(a) through BIO-1(u), BIO-3(a), and BIO-3(b), impacts to biological resources would be reduced to less than significant levels.

4.4.2.3 Cumulative Impacts

Geographic Extent

For biological resources, the geographic scope of the cumulative analysis analyzes the potential for these incremental impacts to combine with other past, present, and reasonably foreseeable projects to cause or contribute to significant cumulative effects within 15-miles of the Project site. The list of projects within 15-miles of the Project site considered for cumulative analysis is in Table 3-1. As shown in Figure 3-1 and Table 3-1, Luna Valley Solar I, Heartland 1 and 2, and Sonrisa Solar are cumulative projects proposed within 3 miles of the Project site that could cause impacts similar to those associated with the Project. Luna Valley Solar I would consist of approximately 1,252 acres of PV facilities. Sonrisa Solar would consist of 1,700 acres of PV facilities. Heartland 1 and 2 would consist of 1,384 and 1,116 acres of renewable energy facilities. In addition, the Great Valley Solar Facility, which has already been constructed, is located south of the Project site and consists of 3,732 acres of PV facilities.

This geographic extent is appropriate for the issue area of Biological Resources as it represents a contiguous extent of roughly similar habitats/land cover types with potential to support one or more of the sensitive biological resources identified as having some potential to occur within the Project site, and can be reasonably assumed to have some direct or indirect genetic linkage with individual plants and animals that would occur within one or more of the Project components. Although many of the species that have potential to occur within the various project components have ranges that exceed the geographic extent of this cumulative analysis, it is reasonable to assess cumulative impacts on a local or regional population. If impacts are determined to be less than significant on a local or regional population, then it follows that there would also be no significant impacts to the overall population of that species. Furthermore, analyses of wide-ranging species over a very large geographic area would have inherently higher margins of error, and the results would be consequently less reliable. Assessing cumulative impacts within a geographic range that reasonably accounts for local populations, and considers reasonable and foreseeable development of a region, will provide the most reasonable conclusions.

San Joaquin Kit Fox

The geographic extent of the cumulative assessment of impacts to San Joaquin kit fox is 15 miles. Construction-related and operational impacts on San Joaquin kit fox after the implementation of recommended Mitigation Measures would be less than significant. Some of the identified cumulative projects have the potential to impact suitable habitat for the species. The Project would maintain potential for kit fox movement across the site through use of wildlife-friendly fencing as described in the Mitigation Measures. Being that the Project site is currently in agricultural production and highly disturbed, the Project would not contribute to the cumulative impact to identified kit fox population centers or important linkage or satellite habitat areas. In addition, compliance with applicable federal, state, and local regulations relating to preservation of sensitive species in these areas, and adherence to the proposed mitigation measures that will be implemented by each regional project, would reduce cumulative biological impacts to a less than significant level. Therefore, the Project, in combination with all identified cumulative projects, would not result in a cumulatively considerable impact to San Joaquin kit fox.

Burrowing Owl

The geographic extent of the cumulative assessment of impacts to burrowing owl is 15 miles. Project impacts to burrowing owl after the implementation of recommended Mitigation Measures would be less than significant during construction and decommissioning (associated with nesting and foraging habitat removal and collisions) as well as during operation and maintenance (associated with collisions). Several of the identified cumulative projects may also result in impacts to the species, similar to this Project. The area within 15-miles of the Project site offers substantial amounts of suitable nesting and foraging habitat, and the area affected by the identified cumulative projects does not represent a significant portion of remaining suitable nesting and foraging habitat for the species within 15-miles of the Project site. In addition, compliance with applicable federal, state, and local regulations relating to preservation of sensitive species in these areas, adherence to the proposed mitigation measures that will be implemented by each regional project would reduce cumulative biological impacts to a less than significant level. Therefore, the Project, in combination with all identified cumulative projects, would not result in a cumulatively considerable impact to burrowing owl.

Swainson's hawk

The geographic scope of potential cumulative impacts related to Swainson's hawk is the same as the project-level study area (a 10-mile radius), which corresponds to the area that encompasses the regional population (HELIX 2018a; Appendix E2). The list of projects considered for cumulative analysis is in Appendix E2. Although impacts to Swainson's hawk foraging habitat from the proposed Project alone was not considered significant, identified cumulative projects have the potential to impact suitable foraging habitat for Swainson's hawk. However, the identified cumulative projects do not represent a significant portion of the surplus foraging habitat for Swainson's hawk across the cumulative study area (HELIX 2018a; Appendix E2). Therefore, the Project, in combination with all identified cumulative projects, would not result in a cumulatively considerable impact to Swainson's hawk.

Wildlife Movement (Avian Migratory Pathways)

The geographic extent of the cumulative assessment of impacts to wildlife movement is 15 miles. The identified cumulative projects are also PV solar facility projects and so increase the area of collision hazards that could injure or kill common or special status bird species. However, most of these project sites are distant from the Mendota Wildlife Area stopover site and do not provide any unique movement or dispersal habitat, and are thus not likely to attract flyover traffic and interfere with migratory birds. Nevertheless, the proposed Project includes mitigation to ensure adherence to APLIC standards to minimize collisions and electrocution. In addition, the likelihood of an avian mortality from the proposed Project is low, especially with implementation of Mitigation Measures BIO-3(a) and BIO-3(b). Because of the resulting reduction in the potential to affect bird species, the incremental effects of the proposed Project on overall avian mortality from collision and electrocution risk would not be cumulatively considerable.

4.5 Cultural Resources

This section identifies and evaluates issues related to cultural resources in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methodology used to evaluate potential impacts, and the results of the impact analysis, as well as mitigation measures required to reduce impacts to less than significant levels. The analysis presented in this section is based on a review of relevant literature and records search results, as well as the results of an intensive pedestrian survey, presented in the Project-specific Cultural Resources Assessment Report (Rincon Consultants, Inc. [Rincon] 2020) contained in Appendix F.

4.5.1 Setting

4.5.1.1 Environmental Setting

The Project site is located in California's Central Valley, which extends from the Siskiyou Mountains in the north to the Tehachapi Mountains in the south, and covers an area approximately 650 miles long and 250 miles wide. The Central Valley is bound by the Cascade Range and Sierra Nevada in the east and the Coast Ranges in the west. The Central Valley is divided into two smaller valleys by the Sacramento-San Joaquin Delta: the Sacramento Valley and the San Joaquin Valley. The Sacramento Valley is located north of the Sacramento-San Joaquin Delta; the San Joaquin Valley lies to the south.

The Project site is located within the central part of the San Joaquin Valley. The valley is composed of active alluvial fans, alkali basins, and river floodplains. Historically, the valley supported a treeless plain with patches of alkali-tolerant annual forbs and grasses (Rosenthal et al. 2007). Wildlife included antelope, deer, and elk that wintered on the plains, and jackrabbits, ground squirrels, and quail (Wallace 1978a).

a. Prehistoric Setting

The Central Valley prehistoric record is divided into three periods: Paleo-Indian (11,550 to 8550 BCE), Archaic (8550 BCE to CE 1100), and Emergent (CE 1100 to Historic). The Archaic period is further divided into three sub-periods: Lower Archaic (8550 to 5550 BCE), Middle Archaic (5550 to 550 BCE), and Upper Archaic (550 BCE to CE 1100) (Rosenthal et al. 2007).

Paleoindian Period (11,550-8,550 BCE)

Evidence of human occupation of the Central Valley during the Paleo-Indian period comes primarily from the San Joaquin Valley. Basally thinned and fluted concave base projectile points (such as arrow heads), similar to Clovis points, have been found in three San Joaquin Valley areas: Tracy Lake, the Woolfsen mound, and the Tulare Lake basin. Little other evidence of human occupation during the Paleo-Indian period is available for the Central Valley.

Lower Archaic (8,550-5,550 BCE)

Lower Archaic occupation of the Central Valley is known mainly from isolated finds along the ancient shorelines of lakes. Very little archaeological evidence exists for occupation of the valley floor during the Lower Archaic (Rosenthal et al. 2007).

Middle Archaic (5550-550 BCE)

The Middle Archaic is characterized by a climatic shift to warmer, drier conditions, similar to present-day conditions. By the Middle Archaic, foothill and valley floor groups were distinct and separate adaptations. Early sites from the Middle Archaic period are more abundant in the foothill areas and are characterized by a large quantity of stone implements designed to exploit acorns and pine nuts (Rosenthal et al. 2007).

Upper Archaic Period (cal. 600 BCE-cal. CE 1000)

Climatic changes at the start of the Upper Archaic resulted in a cooler, wetter, and more stable environment. During the Upper Archaic period, regional variations were more common and focused on resources that could be processed in bulk, such as acorns, salmon, shellfish, rabbits, and deer. Use of mortars and pestles for food processing was prevalent, except for the valley margins where handstones and milling slabs remained dominant (Rosenthal et al. 2007).

Emergent Period (CE 1000-Historic)

During the Emergent Period, many Archaic Period technologies and cultural traditions disappeared throughout the Central Valley. Practices very similar to those observed by later European explorers appeared at this time. Research on Emergent Period sites in the San Joaquin Valley has been limited and only one cultural pattern, the Panoche Complex (ca. CE 1500 to 1850), has been fully identified (Moratto 1984).

b. Ethnographic Setting

At the time of European contact, the Central Valley was occupied by speakers of the California Penutian language family, specifically the Yokuts. The Yokuts entered the San Joaquin Valley sometime prior to CE 1400, perhaps by force, as indicated by skeletal remains with fatal wounds inflicted by projectile points. Historically, Yokuts have been divided into three cultural-geographical groupings: Northern Valley, Southern Valley, and Foothills (Arkush 1993). The Project site appears to be at the juncture of Northern Valley Yokuts and Southern Valley Yokuts territory.

The territory of the Northern Valley Yokuts is defined roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east. The southern boundary is located approximately where the San Joaquin River bends northward and the northern boundary is roughly halfway between the Calaveras and Mokelumne Rivers. Populations were concentrated along waterways and on the more hospitable east side of the San Joaquin River (Wallace 1978a). The Southern Valley Yokuts territory included Tulare, Buena Vista, and Kern lakes and the lower portions of the Kings, Kaweah, Tule, and Kern rivers (Wallace 1978b).

A large Southern Valley Yokuts village, Poso de Chane, was located about 6 miles east of present-day Coalinga (approximately 30 miles south of the Project site). The village was centered on a large watering pool (poso). Later, the area became home to a small Spanish/Mexican agricultural community (Hoover et al. 1990).

c. Historic Setting

The post-Contact history of California is generally divided into three periods: the Spanish period (1769-1822), the Mexican period (1822-1848), and the American period (1848-present).

Spanish Period (1769-1822)

Gaspar de Portolá and Franciscan Father Junipero Serra established the first Spanish settlement in Alta California at Mission San Diego de Alcalá in 1769. This was the first of 21 missions erected by the Spanish between 1769 and 1823. Portolá continued north, eventually reaching the San Francisco Bay in 1769. In 1772, Pedro Fages led the first Europeans to enter the San Joaquin Valley (Wallace 1978a, 1978b; Johnson et al. 1993). Fages led a small expedition into the southernmost part of the valley, stopping at a village on the shores of Buena Vista Lake, before heading towards San Luis Obispo (Wallace 1978a, 1978b). The next European to enter the valley was Francisco Garcés in 1776 (Wallace 1978a, 1978b). In the early 1800s numerous expeditions were made into the central valley to search for land for new missions or to recapture runaway neophytes (Hoover et al. 2002). However, the Spanish never succeeded in taking control of the region and no missions were established in the Central Valley.

During this period, Spain also deeded ranchos to prominent citizens and soldiers, although very few in comparison to the subsequent Mexican Period. To manage and expand their herds of cattle on these large ranchos, colonists enlisted the labor of the surrounding Native American population (Engelhardt 1927a). Very few of the Central Valley tribes came under the control of the Spanish missions or ranchos. However, numerous runaway neophytes fled to the Central Valley, influencing local populations (Wallace 1978a, 1978b). The increase in contact with diseases brought by Europeans greatly reduced the Native American population (McCawley 1996).

Mexican Period (1822-1848)

The Mexican Period commenced when news of the success of the Mexican Revolution (1810-1821) against the Spanish crown reached California in 1822. This period was an era of extensive interior land grant development and exploration by American fur trappers west of the Sierra Nevada Mountains. Beginning in 1833, mission lands were conferred as rancho grants. Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Gumprecht 2001). However, no ranchos were established in the Central Valley proper (Wallace 1978a).

American Period (1848-Present)

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. Settlement of southern California continued dramatically in the early American Period.

The discovery of gold in northern California in 1848 led to the California Gold Rush, despite the first California gold being discovered in Placerita Canyon near the San Fernando Mission in 1842 (Guinn 1915). In 1850, California was admitted into the United States and by 1853, the population in the state exceeded 300,000. Thousands of settlers and immigrants continued to move into the state, particularly after the completion of the transcontinental railroad in 1869.

Fresno County was established on April 19, 1856, and underwent four stages of development: the mining period, which continued into the 1860s; the sheep and cattle raising period from the 1860s to 1874; the general farming period from the 1870s; and the later transition to irrigated row crops. Moses J. Church developed some of the County's first canals, fostering an era of prosperous irrigated row crop farming (Winchell 1933). To this day, Fresno County produces more than 350

commercial crops and is home to 1.88 million acres of the world's most productive farmland (Fresno County Farm Bureau 2007).

The community of Three Rocks, located approximately four miles south of the current Project site, is named for its view of the Three Rocks that were said to be the hideout and headquarters of Joaquin Murrieta, a notorious bandit who terrorized mining camps and stage operations and who became the inspiration for the character of Zorro (California Office of Historic Preservation 2013).

d. Cultural Resources Identified within the Project Site and Surrounding Area

This section is based in part on the Project-specific Cultural Resources Assessment Report (Rincon 2020).

Records Search and Historic Map Review

The research investigations completed for the Project consisted of a records search of the Project site and a 0.5-mile radius buffer at the Southern San Joaquin Valley Information Center (SSJVIC), located at the California State University, Bakersfield. The SSJVIC is an affiliate of the State of California Office of Historic Preservation and the official state repository of cultural resource records and reports for Fresno County. As part of the records search, the following federal and state of California inventories were reviewed:

- California Inventory of Historic Resources (California Office of Historic Preservation 1976);
- California Points of Historical Interest (California Office of Historic Preservation 1992 and updates);
- California Historical Landmarks (California Office of Historic Preservation 1996); and
- Directory of Properties in the Historic Property Data File (California Office of Historic Preservation 2013). The directory includes the listings of the National Register of Historic Places, National Historic Landmarks, the California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest.

Historic research also was performed to better understand the history of land use of the Project site. This research consisted of reviewing historic topographic maps and aerials.

SSJVIC records indicate seven previous archaeological studies have been performed within a 0.5-mile radius of the Project site. Of these studies, four include portions of the Project site. The records searches indicated that three previously recorded sites had been documented within 0.5-mile of the Project boundary. These resources included prehistoric period trash scatters (P-10-002222), prehistoric period isolate flake (P-10-006311), and historic period transmission line (P-10-006614). One of these sites (historic period transmission line, P-10-006614) was located on the Project site. The resource was evaluated in 2015 and was recommended ineligible for the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) due to a lack of significant historical associations (Rincon 2020).

e. Native American Consultation

Rincon contacted the Native American Heritage Commission (NAHC) to request a search of the Sacred Lands File on August 5, 2016 to identify any known places of importance to Native Americans in or adjacent to the Project site. The NAHC responded that no sacred lands or other Native American cultural resources were identified in the Project site and provided a contact list of eight Native American individuals or tribal organizations who may have knowledge of cultural resources.

On August 11, 2016, Rincon prepared and mailed letters to each of the contacts on the list requesting any information related to the Project site and soliciting any concerns or comments they may have. On September 28, 2016, Mr. Robert Pennell of the Table Mountain Rancheria responded to Rincon's letter. Mr. Pennell stated that the tribe "decline[d] participation at this time but would appreciate being notified in the unlikely event that cultural resources are identified."

On October 11, 2016, Christine Dabney-Keel, Environmental Department Assistant for the Tule River Tribe's Department of Environmental Protection, responded via email to Rincon's letter for consultation. Ms. Dabney-Keel stated that the Project site is located near the Table Mountain Rancheria and is within the Table Mountain Rancheria's immediate area of interest. The Tule River Tribe deferred communication and consultation to the Table Mountain Rancheria.

On May 4, 2018, Fresno County provided notification of the Project to the following Tribal Governments under the provisions of Assembly Bill (AB) 52: Table Mountain Rancheria, Dumna Wo Wah, Santa Rosa Rancheria, and the Picayune Rancheria of the Chukchansi Indians. Table Mountain Rancheria declined participation and no other responses were received.

Archaeological Field Surveys

A pedestrian survey was conducted in September 2016 to assess the cultural resources at the Project site. Due to ongoing agricultural activities, visibility of the Project site was limited at times and varied from 0 to 100 percent. Survey efforts identified one historical resource (SCAR-HIS-1) and two isolates (SCAR-ISO-1 and SCAR-ISO-2). SCAR-HIS-1 was identified as a historic well and water pump elevated on a large tinder frame and the two isolates were identified as bottle fragments; however, evaluation found all three resources to be ineligible for CRHR under all four criteria.

f. Potential for Unknown Buried Cultural Resources

Although no significant resources have been found at the Project site, the site is in a region identified as having moderately low to moderate sensitivity for buried archaeological resources (Meyer, Young, and Rosenthal 2010). No drainages or other features are on the Project site that would suggest greater archaeological sensitivity. The ground surface of the Project site has been highly disturbed by previous agricultural activities.

4.5.1.2 Regulatory Setting

a. Federal

National Register of Historic Places

The National Historic Preservation Act established the NRHP 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 to indicate what properties should be considered for protection from destruction or impairment" (36 Code of Federal Regulations Section 60.2). The NRHP recognizes both historical-period and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established 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.

Resources identified as eligible for or listed in the NRHP are automatically considered eligible for listing in the California Register of Historical Resources

b. State

California Register of Historical Resources

Created in 1992 and implemented in 1998, the California Register of Historical Resources (CRHR) is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria, and retains sufficient integrity to reflect its historical significance:

1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. It is associated with the lives of persons important in our past.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.
4. It has yielded, or may be likely to yield, information important in history or prehistory.

Typically, an archaeological site in California is recommended eligible for listing in the CRHR based on its potential to yield information important in prehistory or history (Criterion 4). Important information includes chronological markers such as projectile point styles or obsidian artifacts that can be subjected to dating methods or undisturbed deposits that retain their stratigraphic integrity. However, archaeological sites may also be recommended eligible under CRHR Criteria 1, 2, and/or 3.

California Environmental Quality Act

Under the California Environmental Quality Act (CEQA) (Public Resources Code (PRC) Section 21084.1), a Project would have a significant effect on the environment if it causes a substantial adverse change in the significance of an historical resource. The CEQA Guidelines (14 CCR Section 15064.4) recognize that an 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 PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific,

economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be a historical resource as defined in PRC Section 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, then the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.4 apply. 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 an historical resource would be materially impaired) in the significance of an historical resource, then the lead agency must identify potentially feasible measures to mitigate these effects (14 California Code of Regulations. Sections 15064.4[b][1], 15064.4[b][4]).

If an archaeological site does not meet the historical resource criteria contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of Section 21083, which is a unique archaeological resource. As defined in Public Resources Section 21083.2, a "unique" archaeological resource is an archaeological artifact, object, or site, for which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with the provisions of Section 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (PRC Section 21083.1[a]). If preservation in place is not feasible, mitigation measures shall be required.

If an archaeological resource is neither a unique archaeological nor a historical resource, then the effects of the project on those resources shall not be considered a significant effect on the environment (14 California Code of Regulations Section 15064.4[c][4]).

CEQA amendments set forth in AB 52, relating to Native Americans, were approved in 2014. AB 52's amendments to CEQA specify that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code Section 21074, is one that may have a significant effect on the environment. AB 52 requires a lead agency to begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project, if the tribe requested to the lead agency, in writing, to be informed by the lead agency of proposed projects in that geographic area and the tribe requests consultation, prior to determining which form of CEQA documentation is required for the project. Tribal Cultural Resources are addressed in Section 4.15, *Issues Addressed in Initial Study* and the summary of AB 52 consultation is provided above in Section 4.5.1.1.e.

Native American Heritage Commission

PRC Section 5097.91 established the NAHC, the duties of which include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. PRC 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.

Other Relevant State Regulations

Sections of the Public Records Act (Sections 6254[r] and 6254.10), Health and Safety Code (Section 7050.5), Penal Code (Section 622.5), and PRC (Section 622.5) provide guidance for protection of archaeological resources and human remains. These codes provide protection from unauthorized excavation, looting, or vandalism; guidance following discovery of human remains; penalty for injuring or destroying objects of historic or archaeological interest; and penalty for unauthorized disturbance or removal of archaeological or historical features.

c. Local

Fresno County General Plan

The Fresno County General Plan (2000) Open Space and Conservation Element contains several objectives and policies relevant to the protection of cultural resources on the Project site and in the surrounding area. The Historical, Cultural, and Geological Resources section of the Open Space and Conservation Element provides policies directing the protection of historical and archaeological resources in the County.

- **Policy OS-J.1:** The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archeological, paleontological, and cultural sites and their contributing environment from damage, destruction, and abuse to the maximum extent feasible. Project-level mitigation shall include accurate site surveys, consideration of project alternatives to preserve archeological and historic resources, and provision for resource recovery and preservation when displacement is unavoidable.
- **Policy OS-J.2:** The County shall, within the limits of its authority and responsibility, maintain confidentiality regarding the locations of archeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.
- **Policy OS-J.3:** The County shall solicit the views of the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or sites of cultural importance.

4.5.2 Impact Analysis

4.5.2.1 Methodology and Significance Thresholds

a. Methodology

The evaluation of potential Project effects is based, in part, on the findings in the Cultural Resources Assessment Report (Rincon 2020) prepared for the Project. The purpose of the evaluation was to identify any cultural resources that may be present on the Project site. The cultural resources

assessment included a literature review, records search, review of historic topographic maps, geoarchaeological review, and pedestrian field survey of the Project site.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would result in a significant impact if it would:

a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5;
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; and/or
c. Disturb any human remains, including those interred outside of formal cemeteries.

The Initial Study in Appendix A determined that the Project would result in no impact to historical resources, specifically built environment resources, pursuant to the CEQA Guidelines Section 15064.5 (threshold a). Therefore, this issue is not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for an impact analysis discussion of this threshold.

4.5.2.2 Project Impacts and Mitigation Measures

Threshold b:	Whether the Project would cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5

Impact CR-1 GROUND DISTURBING ACTIVITIES COULD CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF PREVIOUSLY UNKNOWN ARCHAEOLOGICAL RESOURCES, PURSUANT TO CEQA GUIDELINES SECTION 15064.5. HOWEVER, WITH THE IMPLEMENTATION OF MITIGATION MEASURES, IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility and PG&E Improvements

As described above, formal assessment of archaeological resources, specifically historic-age archaeological resources and unique archaeological resources, did not reveal any listed or eligible archeological resources. The Project site has low to moderate potential for discovering buried archaeological resources; therefore, Project-related earth moving activities have the potential to result in a significant impact to previously undiscovered archaeological resources. Destruction or loss of integrity in these resources would result in a potentially significant impact and mitigation would be required.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to archaeological resources and no additional mitigation is required.

Mitigation Measures

The following mitigation measures are applicable to both the Solar Facility and the PG&E Improvements:

CR-1(a) Retain a Qualified Archaeologist

Prior to the issuance of construction/grading permits, the Applicant shall retain a Registered Professional Archaeologist or a monitor under their direction (qualified archaeologist) to carry out all mitigation measures related to archaeological and historical resources.

CR-1(b) Cultural Resources Awareness Program

Prior to the commencement of construction/grading activities, the Applicant shall ensure that the qualified archaeologist has conducted a Cultural Resources Awareness Training for the general contractor, subcontractor(s), and all construction workers participating in earth disturbing activities. The training shall describe the potential of exposing archaeological resources, the types of cultural materials that may be encountered, and directions on the steps that shall be taken if such a find is encountered. This training may be presented alongside other environmental training programs required prior to construction. A training acknowledgment form must be signed by all workers who receive the training and retained. Additional trainings shall be conducted for all new construction personnel participating in earth disturbing activities throughout construction.

CR-1(c) Accidental Discovery Procedures

In the event unanticipated archaeological resources are encountered during earth disturbing activities, compliance with federal and state regulations and guidelines regarding the treatment of cultural resources and/or human remains shall be required.

1. All construction activities within 50 feet shall halt and the County shall be notified.
2. A qualified archaeologist, defined as one meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, shall inspect the findings and report the results of the inspection to the developer and the County.
3. In the event that the identified archaeological resource is determined to be prehistoric, the County and qualified archaeologist will coordinate with and solicit input from the appropriate Native American Tribal Representatives regarding significance and treatment of the resource as a tribal cultural resource. Any cultural resource of Native American origin discovered during Project work shall be treated in consultation with the tribe, with the goal of preserving in place with proper treatment.
4. If the County determines that the resource qualifies as a significant archaeological resource (as defined pursuant to the CEQA Guidelines) and that the Project has potential to damage or destroy the resource, mitigation shall be implemented in accordance with PRC Section 21083.2 and CEQA Guidelines Section 15126.4. Consistent with CEQA Guidelines Section 15126.4(b)(3), mitigation shall be accomplished through either preservation in place or, if preservation in place is not feasible, data recovery through excavation conducted by a qualified archaeologist implementing a detailed archaeological treatment plan.

Significance After Mitigation

Implementation of Mitigation Measures CR-1(a) through CR-1(c) would reduce potential impacts to previously unknown archaeological resources to less than significant levels.

Threshold c:	Whether the Project would disturb any human remains, including those interred outside of formal cemeteries

Impact CR-2 GROUND DISTURBING ACTIVITIES COULD RESULT IN DAMAGE TO PREVIOUSLY UNIDENTIFIED HUMAN REMAINS. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH COMPLIANCE WITH EXISTING REGULATORY REQUIREMENTS.

Solar Facility and PG&E Improvements

No cemeteries are known to occur on or adjacent to the Project site and no evidence of a cemetery or burial areas was identified within or adjacent to the Project site during the data research and fieldwork performed for the Project. Thus, discovery of buried human remains is not likely to occur with construction or decommissioning. Nonetheless, ground disturbing activities, irrespective of depth, would have the potential to encounter human remains. While unlikely, ground disturbing construction activities, such as grading and trenching have the potential to uncover human remains.

California Health and Safety Code Section 7050.5 requires:

> in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlay adjacent remains, until the County Coroner has examined the remains. If the Coroner determines the remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall contact by telephone within 24 hours the NAHC. In addition, any person who mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor.

Impacts would be less than significant with compliance with these existing requirements.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to human remains and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.5.2.3 Cumulative Impacts

The geographic scope for cumulative impacts to cultural resources comprises a five-mile radius from the Project site. This geographic scope of analysis is appropriate because the archaeological resources within this radius are expected to be similar to those that occur on the Project site because their proximity, similar environments, landforms, and hydrology are expected to have resulted in similar land uses over time. Based on the moderately low to moderate sensitivity of the region, the area within this five-mile radius of the Project site may contain a significant archaeological record that has not been well documented or recorded. Therefore, this analysis conservatively assumes that the land within this area contains cultural resources that are not known.

The temporal scope for cumulative impacts to cultural resources would be the duration of the Project when ground disturbing activities occur. In this context, the incremental impacts of the Project could combine with similar incremental impacts of other projects in the cumulative scenario to cause or contribute to a significant cumulative impact if any of the criteria in Section 4.5.1.2, *Methodology and Significance Thresholds*, were exceeded.

As shown in Figure 3-1 and Table 3-1, Luna Valley Solar I, Heartland, and Sonrisa Solar are cumulative projects proposed within 5 miles of the Project site that could cause impacts to cultural resources similar to those associated with the Project. Luna Valley Solar I would consist of approximately 1,252 acres of PV facilities. Sonrisa Solar would consist of 1,700 acres of PV facilities. Heartland 1 and 2 would consist of 1,384 and 1,116 acres of energy generation facilities respectively. The Project, in conjunction with the other cumulative projects in the vicinity, would have the potential to adversely impact additional historic and prehistoric cultural resources. However, as noted previously, implementation of Project-level mitigation measures, that would require cessation of activities and buffering of finds, would reduce the incremental contribution of the Project to any potential cumulative impact. Additionally, cumulative construction impacts related to unknown prehistoric and archaeological cultural resources would be similar to that which is described for Project-specific impacts and would be addressed on a project-by-project basis. As such, the potential incremental effects of the Project would not be cumulatively considerable.

There is no indication of any existing significant adverse condition relating to the discovery of human remains in the geographic area of cumulative consideration to which the Project could contribute. A less-than-significant cumulative impact would result relating to the discovery of human remains.

4.6 Energy

This section identifies and evaluates issues related to energy in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methodology used to evaluate potential impacts, and the results of the impact analysis. The analysis presented in this section is based in part on Project-specific energy emissions calculations included in Appendix G.

4.6.1 Setting

4.6.1.1 Environmental Setting

PG&E is an investor-owned utility company that provides electricity and natural gas supplies. PG&E serves a 70,000 square-mile area that includes western Fresno County (PG&E 2020). Operating characteristics of PG&E's electricity and natural gas supply and distribution systems are provided below.

PG&E Utility Operations

PG&E provides "bundled" services (i.e., generation, transmission, and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial, and agricultural consumers. Customers can obtain electricity from alternative providers such as municipalities or Customer Choice Aggregators, and from distributed-generation resources, such as rooftop solar installations.

In recent years, PG&E has improved its electric transmission and distribution systems to integrate new renewable energy resources, distributed generation resources, and energy storage facilities, and to help create a platform for the development of new Smart Grid technologies. As required by California law, on July 1, 2015, PG&E filed its proposed electric distribution resources plan for approval by the CPUC (CPUC 2018a; PG&E 2015a). The plan identifies optimal locations on its electric distribution system for deployment of distributed energy resources. PG&E's proposal is designed to allow energy technologies to interconnect and integrate into the larger grid.

In 2018, PG&E generated and/or procured 48,832 GWh of electricity (PG&E 2019). Table 4.6-1 itemizes the percentage of PG&E's total deliveries of electricity to customers in 2018, represented by each major electricity resource.

Table 4.6-1 PG&E's Total Deliveries of Electricity

Source	Percent of Bundled Retail Sales in 2018
PG&E-Owned Generation Facilities	**59.3%**
Nuclear	33.5%
Small Hydroelectric	1.5%
Large Hydroelectric	12.1%
Fossil Fuel-Fired	11.6%
Solar	0.6%
Qualifying Facilities	**4.9%**
Renewable	0.5%
Non-Renewable	4.4%
Irrigation Districts and Water Agencies	**0.1%**
Small Hydroelectric	0.1%
Large Hydroelectric	–
Other Third-Party Purchase Agreements	**46.3%**
Renewable	36.2%
Non-Renewable	0.6%
Large Hydroelectric	9.5%
Others, Net[1]	**(10.6%)**
Total	**100%**

[1] Mainly comprised of net California Independent System Operator (CAISO) open market purchases.

Source: PG&E 2019

Renewable Energy Resources

California law requires load-serving entities, such as PG&E, to gradually increase the amount of renewable energy they deliver to their customers to at least 33 percent of their total annual retail sales by 2020. This program, known as the Renewables Portfolio Standard (RPS) program, became effective in December 2011, and established three multi-year compliance periods that have gradually increasing RPS targets: 2011 through 2013, 2014 through 2016, and 2017 through 2020. After 2020, the RPS compliance periods will be annual (PG&E 2015b).

Renewable generation resources, for purposes of the RPS program, include bioenergy such as biogas and biomass, certain hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. As shown in Table 4.6-2, during 2018, 38.9 percent of PG&E's energy deliveries were from renewable energy sources, exceeding the annual RPS target of 28 percent (PG&E 2020).

Table 4.6-2 PG&E Renewable Energy Sources

Source	Percent of Bundled Retail Sales in 2019
Bioenergy	4.4%
Geothermal	3.7%
Wind	10.0%
RPS-Eligible Hydroelectric	2.7%
Solar	18.1%
Total	**38.9%**

Source: PG&E 2020

Electricity Consumption

Table 4.6-3 shows electricity consumption by sector in PG&E's service area, based on the latest data available from the CEC. The table shows that PG&E produced approximately 80,400 gigawatt-hours (GWh) in 2018, of which approximately 4,300 GWh were consumed by "other commercial uses" (CEC 2019a). Electricity customers in Fresno County consumed 7,652 GWh of electricity, with 4,908 GWh consumed by the non-residential sector (CEC 2019b).

Table 4.6-3 Electricity Consumption in PG&E Service Area by Sector

Electricity Consumed by Sector in 2018 (GWh)							
Agricultural and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage (GWh)
5,832	30,148	4,266	10,519	1,594	27,700	311	80,369

Source: CEC 2019a

Natural Gas Consumption

PG&E provides natural gas transportation services to "core" customers and "non-core" customers (i.e., industrial, large commercial, and natural gas-fired electric generation facilities) connected to its gas system in its service territory. In 2018, total sales of natural gas were 287 billion cubic feet (PG&E Corporation and PG&E 2019). Table 4.6-4 shows the 2018 natural gas consumption by sector in the PG&E service area.

Table 4.6-4 Natural Gas Consumption in PG&E Service Area by Sector

Natural Gas Consumed by Sector in 2018						
Agricultural and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Total Usage
37.2 million therms	899.1 million therms	59.0 million therms	1.8 billion therms	190.2 million therms	1.8 billion therms	4.8 billion therms

Source: CEC 2019c

As shown in Table 4.6-4, PG&E delivered approximately 4.8 billion therms in 2018, of which approximately 59 million were consumed by other commercial uses (CEC 2019c). Customers in Fresno County consumed approximately 347 million therms of natural gas in 2018, with approximately 246 million therms consumed by the non-residential sector (CEC 2019d).

Gasoline and Diesel

Supply

California is nearly self-sufficient with regard to the gasoline and diesel fuel supply, obtaining almost all of the supply to meet local demand from the California refineries (CEC 2014). Refineries in California often operate at or near maximum capacity because of the high demand for petroleum products. When unplanned refinery outages occur, replacement supplies must be brought in by marine tanker from refineries in the state of Washington or on the U.S. Gulf Coast. California requires all motorists use, at a minimum, a specific blend of motor gasoline called California Reformulated Gasoline, as part of an overall program to reduce emissions from motor vehicles. Refineries in several other countries can also supply California Reformulated Gasoline. However, locating and transporting replacement motor gasoline that conforms to California's strict fuel specifications from overseas can take several weeks (EIA 2017). Because of this, unplanned outages often result in a reduction in supply that causes prices to increase. The energy industry resolves most petroleum supply disruptions or shortage events before they become significant (National Association of State Energy Officials 2018).

Consumption and Distribution

Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline being consumed by light-duty cars, pickup trucks, and sport utility vehicles (CEC 2018). Diesel fuel is the second largest transportation fuel used in California, representing 17 percent of total fuel sales behind gasoline. Nearly all heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction vehicles, and heavy-duty military vehicles and equipment have diesel engines. Diesel is the fuel of choice for this equipment because it has 12 percent more energy per gallon than gasoline and has fuel properties that prolong engine life making it ideal for heavy-duty vehicle applications (CEC 2018). According to the State Board of Equalization, 15.5 billion gallons of gasoline and 3.0 billion gallons of diesel, including off-road diesel, were sold in California in 2016 (State Board of Equalization 2019a, 2019b). The CEC estimates there were between 250-399 gasoline stations in Fresno County in 2016 (CEC 2018). Commercial fleet fueling services are available in the City of Mendota, approximately 2.7 miles northeast of the Project site (Commercial Fueling Network 2018).

4.6.1.2 Regulatory Setting

a. Federal

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (42 United States Code Section 8201 et seq.) serves as the underlying authority for federal energy management goals and requirements and is the foundation of most federal energy requirements. The Act established energy-efficiency standards for consumer projects and includes a residential program for low-income weatherization assistance, grants and loan guarantees for energy conservation in schools and hospitals, and energy-efficiency

standards for new construction. Furthermore, the Act established fuel economy standards for on-road motor vehicles in the United States. The National Highway Traffic and Safety Administration, part of the U.S. Department of Transportation, is responsible for establishing additional vehicle standards and revising existing standards under the Act (National Highway Traffic Safety Administration 2014, 2019).

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 (42 United States Code Section 13201 et seq.) sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; and constructing energy-efficient buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary micro-turbine power plants, and solar power equipment.

b. State

Warren-Alquist Act

The 1975 Warren-Alquist Act (PRC Section 25000 et seq.) established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The Act was the driving force behind the creation of Appendix F to the CEQA Guidelines.

Renewable Portfolios Standard

Senate Bill 1078 established the state's RPS in 2002, and required 20 percent of the state's energy portfolio to be supplied by renewable sources such as solar, wind, hydroelectricity, geothermal, and bioenergy renewable energy by 2017. RPS goals have been accelerated over time to require the state's energy portfolio to be supplied by renewable sources in increasingly higher percentages. Since 2011, the RPS target has required all electricity retailers in the state, including investor-owned utilities such as PG&E, Southern California Edison, and San Diego Gas and Electric to procure 33 percent of their energy sales from renewable sources by the end of 2020 (CPUC 2018b). SB 100, adopted on September 10, 2018, accelerated the state's RPS by requiring electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. This further supports the reduction of GHG emissions from the electricity sector. Collectively, PG&E, Southern California Edison, and San Diego Gas and Electric met the 33 percent goal in 2016 and are forecast to reach 50 percent in 2020 (CPUC 2018c).

Energy Efficient Building Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings specified in Title 24, Part 6 of the California Code of Regulations include requirements for non-residential building lighting, insulation, ventilation, and mechanical systems (CEC 2015).

The California Green Building Standards Code ([CALGreen] CCR Title 24 Part 11) is a statewide regulatory code for all buildings. CALGreen encourages more sustainable and environmentally friendly building practices, requires use of low-pollution emitting substances that cause less harm to

the environment, promotes the conservation of natural resources, and promotes the use of energy-efficient materials and equipment (California Building Standards Commission 2019).

c. Local

County of Fresno Solar Facility Guidelines

The Fresno County Board of Supervisors modified the Fresno County Solar Facility Guidelines regarding commercial solar projects and processing in unincorporated areas of Fresno County on December 12, 2017 (Fresno County 2017). The Guidelines identify general guidelines and policies related to the land use process for evaluating solar facilities that accommodate new renewable energy technology while balancing the need to protect important farmlands and minimize impacts to existing agricultural operations.

4.6.2 Impact Analysis

4.6.2.1 Methodology and Significance Thresholds

a. Methodology

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for the Project to result in a substantial increase in energy demand and/or wasteful use of energy during the construction, operation and maintenance, and decommissioning of the Solar Facility. The analysis includes the estimated energy consumption for the Solar Facility and PG&E Improvements, and is informed by Appendix F of the CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction, operation and maintenance, and decommissioning energy use estimates for the Solar Facility would be considered excessive, wasteful, or inefficient taking into account that the Solar Facility would provide a new source of renewable energy.

The analysis in this section utilizes the assumptions identified in Section 4.3, *Air Quality*, and Section 4.8, *Greenhouse Gas Emissions*. The precise amount of petroleum fuel demand required to construct the Solar Facility is uncertain, but gasoline and diesel used for equipment and worker and haul vehicles have been estimated using fuel consumption information provided via the emission models, EMFAC and OFFROAD, and anticipated activity. Energy emissions details supporting the Project estimates in this section are presented in Section 4.8, *Greenhouse Gas Emissions,* and Appendix G.

b. Significance Thresholds

Based on Appendix G of the CEQA Guidelines, the Project would result in a significant impact related to energy if it would:

a. Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction, operation and maintenance, or decommissioning; and/or
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

4.6.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the Project would result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction, operation and maintenance, or decommissioning

Impact E-1 CONSTRUCTION, OPERATION AND MAINTENANCE, AND DECOMMISSIONING OF THE PROJECT WOULD NOT RESULT IN POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS DUE TO WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY RESOURCES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Construction

Construction of the Solar Facility would result in fuel consumption from the use of construction tools and equipment, haul truck trips, and vehicle trips generated from construction workers traveling to and from the site. Based on calculations related to equipment use, mobile use and construction schedule, construction of the Solar Facility is expected to consume approximately 585,159 gallons of diesel fuel from construction equipment and vendor, hauling, and water truck trips, and approximately 255,993 gallons of gasoline from construction worker vehicle trips, as shown in the Total Fuel Use table in Appendix G. Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be a typical condition of the Solar Facility. There are no unusual characteristics that would cause the use of construction equipment that would be less energy efficient compared with other similar construction sites in other parts of the state. Additionally, construction equipment delivered to the site will be stored on site throughout the duration of the activities that the equipment is needed rather than the equipment being brought to the site each day. Therefore, construction-related fuel consumption by the Solar Facility would not result in inefficient, wasteful, or unnecessary energy use compared with other similar construction sites.[1] This impact would be less than significant.

Operation and Maintenance

The Solar Facility would use no process gas for the power generation process, and would have no impact on natural gas supplies.

The Solar Facility would receive service power from PG&E and would have emergency generators available on site. Electricity would be consumed by the Solar Facility to operate facility lights and an O&M building to accommodate eight permanent staff members. As noted in Section 2, *Project Description*, the Project Applicant may use an existing trailer, located northwest of the intersection of West Dinuba Avenue and SR 33, already in use for O&M activities by the Great Valley Solar Project. Use of the existing trailer would not increase electricity or power use for the O&M building beyond what the Great Valley Solar Project currently requires. However, if a new O&M building were constructed, annual electricity consumption for operational activities would be approximately 18,240 kWh per year. The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was used to estimate operational energy consumption for a 2,000-square foot O&M building using

[1] Compared to the Tranquillity Solar Project in Fresno County (Fresno County 2014), the Little Bear Solar Project in Fresno County (Fresno County 2018), and the Gaskell West Project in Kern County (Gaskell West LLC 2016).

demand factors for a general office building. CalEEMod Table 5.3, *Energy by Land Use*, in Appendix G estimates the O&M building energy consumption. Using the installed photovoltaic capacity of 400 MW (400,000 kW) AC, the Solar Facility is anticipated to generate approximately 805,920,000 kWh per year. Thus, the minimal amount of electricity required during Solar Facility operation would be offset greatly by the generation of electricity from the Solar Facility; its electricity demand would not constitute a wasteful, inefficient, or unnecessary use of energy sources.

Operation and maintenance would require the use of vehicles and equipment including trucks for routine activities and periodic module washing, mowers or other vegetation management equipment, and additional periodic maintenance equipment such as all-terrain vehicles, tractors, portable generators, and portable water trailers. No heavy equipment would be used during normal facility operation. Vehicles and equipment may require the use of diesel fuel and/or gasoline. As described in Section 2, *Project Description*, the duration of scheduled maintenance activities would vary in accordance with the required task, but could involve up to 40 temporary workers full-time for up to two weeks up to four times per year for module washing, and a similar number and duration for workers regularly visiting the site for routine maintenance activities in addition to the eight permanent staff members. Using the average mobile fuel consumption rates from the EMFAC and OFFROAD inventory yields a conservative estimate of 30,971 gallons of gasoline and 2,113 gallons of diesel annually during Solar Facility operation. Fuel consumption from Solar Facility operation would be approximately 0.0001 percent of the state's consumption of in 2016 (State Board of Equalization 2019a, 2019b). Therefore, the gasoline and diesel use during Solar Facility operation would not constitute a wasteful, inefficient, or unnecessary use of energy. This impact would be less than significant.

Decommissioning

The Solar Facility is anticipated to be in commercial operation for approximately 35 years. In order to extend the life beyond 35 years, the property owner would need to apply for a new Conditional Use Permit through the County of Fresno. Solar facility decommissioning would occur in accordance with the expiration of Unclassified Conditional Use Permit no. 3555 and would involve the removal of all above-grade facilities, buried electrical conduit, and all concrete foundations in keeping with the approved reclamation plan. These activities would take up to two years, and would include the use of similar equipment as for construction activities; therefore, similar energy impacts would be expected. Decommissioning activities and corresponding fuel energy consumption would be temporary and could be comparable to the construction-related fuel demand; decommissioning-related fuel use also would not represent a substantial demand on energy resources. Thus, decommissioning-related fuel consumption by the Solar Facility would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region.[2] This impact would be less than significant.

PG&E Improvements

Construction of the PG&E Improvements would use similar types of energy as would be used for Solar Facility construction, but to a lesser extent. Construction of the PG&E Improvements is estimated to consume approximately 8,404 gallons of diesel and 588 gallons of gasoline for use by construction tools and equipment, haul truck trips, and vehicle trips generated by construction workers traveling to and from the site. The PG&E Improvements would operate continuously once fully energized and the Tranquillity Switching Station operates remotely for the most part.

[2] See footnote 1 for the list of projects considered.

Maintenance would continue to occur on a regular basis in accordance with PG&E's maintenance program for the service area. The maintenance of the PG&E facility with the improvements needed for the proposed Project would not result in a substantial increase in energy use over the existing standard maintenance efforts. In addition, operation of the PG&E Improvements would beneficially affect regional energy supplies by facilitating the transmission of energy generated at the Solar Facility to the existing electrical grid. The PG&E Improvements would not have a significant impact with respect to fuel and electrical energy requirements or on local or regional energy supplies. Therefore, the PG&E Improvements in conjunction with the Solar Facility would not result in combined significant effects with respect to energy requirements and fuel use and no mitigation would be required.

Energy use for construction of the Solar Facility and PG&E Improvements would be additive. Therefore, construction of the Project as a whole is estimated to consume approximately 593,563 gallons of diesel and 256,580 gallons of gasoline for use by construction tools and equipment, haul truck trips, and vehicle trips generated by construction workers traveling to and from the site. As discussed above, construction-related fuel consumption by the Solar Facility would not result in inefficient, wasteful, or unnecessary energy use compared with other similar construction sites.[3] The additional energy use for construction of the PG&E Improvements would represent a small addition in total Project energy use. Therefore, the Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to wasteful energy use and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold b:	Whether the Project would conflict with or obstruct a state or local plan for renewable energy or energy efficiency

Impact E-2 THE PROJECT WOULD NOT CONFLICT WITH OR OBSTRUCT ANY STATE OR LOCAL PLANS FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY. NO IMPACT WOULD OCCUR.

Solar Facility

The Solar Facility involves the construction, operation and maintenance, and decommissioning of a Solar Facility that would produce a new renewable source of energy in Fresno County. The Solar Facility would directly support California's RPS goal of increasing the percentage of electricity procured from renewable sources to at least 50 percent.

As described in Impact E-1, the Solar Facility would require diesel and gasoline fuel, and minimal amounts of electricity through its life. However, these energy inputs would be offset by the anticipated Solar Facility generation of approximately 805,920,000 kWh per year.

In terms of mobile energy usage, the National Highway Traffic and Safety Administration required manufacturers of light duty vehicles to meet an estimated combined passenger car and light truck

[3] Compared to the Tranquillity Solar Project in Fresno County (Fresno County 2014), the Little Bear Solar Project in Fresno County (Fresno County 2018), and the Gaskell West Project in Kern County (Gaskell West LLC 2016).

average fuel economy level of 34.1 miles per gallon (mpg) by model year 2016. In the course of more than 30 years, the National Energy Conservation Policy Act regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet, and has protected against inefficient, wasteful, and unnecessary use of energy. Vehicles used by the Solar Facility construction and maintenance workers would comply with standards, and thus the Solar Facility would not impede the efficient use of mobile fuel.

The O&M building on the Project site would be subject to Title 24, Part 6 Building Energy Efficiency Standards. Pursuant to the California Building Standards Code and the Energy Efficiency Standards, the County would review the design components of the Project's energy conservation measures when the Project's building plans are submitted. These measures could include insulation; energy-efficient heating, ventilation and air conditioning equipment; solar-reflective roofing materials; energy-efficient indoor and outdoor lighting systems; reclamation of heat rejection from refrigeration equipment to heat water; incorporation of skylights; and other measures.

Since the Solar Facility would provide a new source of renewable energy in support of the state's energy goals, offset its fuel usage, and comply with fuel and energy efficiency regulations, it would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impact would occur.

PG&E Improvements

The PG&E Improvements would facilitate the transmission of energy generated at the Solar Facility to the existing electrical grid and would directly support California's RPS goal of increasing the percentage of electricity procured from renewable sources to at least 60 percent by 2030. Similar to the construction of the Solar Facility, vehicles used for the construction of the PG&E improvements would comply with vehicle fuel standards and would not impede the efficient use of mobile fuel. Since the PG&E improvements are necessary to provide renewable energy in support of the state's energy goals, it would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impact would occur.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to a conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

No impact would occur without mitigation.

4.6.2.3 Cumulative Analysis

Neither the Solar Facility nor the PG&E Improvements would conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Because no impact would result, neither the Solar Facility nor the PG&E Improvements could cause or contribute to any cumulative effect in this regard. Therefore, this cumulative analysis focuses on the Solar Facility's and PG&E Improvements' impact relating to the consumption or use of energy during construction, operation and maintenance, or decommissioning.

The geographic context for potential cumulative impacts related to electricity is within PG&E's service area. Equipment and vehicle fuel use is within the Project's construction workers' commute radius (assumed to be approximately 50 miles). The Project would use energy resources during construction, operation and maintenance, and decommissioning of the Solar Facility and the PG&E Improvements; therefore, it could contribute to potential cumulative impacts during any of these phases.

Regarding electricity, there is no existing significant adverse condition that the Solar Facility or the PG&E Improvements would worsen or intensify. To the contrary, the Solar Facility would provide an additional source of renewable energy that could serve the cumulative demand; the PG&E Improvements would improve the transmission of energy generated at the Solar Facility to the existing electrical grid. No significant adverse cumulative effect would result relating to electricity use; instead, a beneficial cumulative impact on energy resources would result.

Similarly, regarding the efficiency of fuel use, there is no existing significant adverse condition (such as a shortage) would be worsened or intensified by the Solar Facility or the PG&E Improvements. Past, present, and reasonably foreseeable future projects within approximately 50 miles of the Project site could require gasoline or diesel, but would not combine with the fuel demands of the Project to cause a significant adverse cumulative impact relating to the wasteful, inefficient, or unnecessary consumption of fuel. In addition, Luna Valley Solar I, Heartland 1 and 2, and Sonrisa Solar are cumulative projects which would provide an additional source of renewable energy that could serve the cumulative demand, similar to the Project.

In the event of a future shortage, higher prices at the pump would curtail unnecessary trips that could be termed "wasteful" and would moderate choices regarding vehicles, equipment, and fuel efficiency. Under these conditions, the Project's less than significant impact relating to wasteful, inefficient, or unnecessary consumption or use of fuel would not be cumulatively considerable.

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4.7 Geology and Soils

This section identifies and evaluates issues related to geology, soils, and paleontological resources in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methodology used to evaluate potential impacts, and the results of the impact analysis, as well as mitigation measures required to reduce impacts to less than significant levels. The geology and soils analysis presented in this section is based in part on the Project-specific Geotechnical Desktop Review (Kleinfelder 2015) and the Project-specific Preliminary Review for Screening of On-Site Septic Disposal Feasibility (Salem Engineering Group, Inc. 2018) included in Appendices H1 and H2, respectively. In addition, the paleontological resources analysis presented in this section is based in part on the Project-specific Paleontological Resources Assessment Report (Rincon 2020) included in Appendix I.

4.7.1 Setting

4.7.1.1 Environmental Setting

a. Geology

The Project site is located in the Great Valley geomorphic province, an alluvial plain about 50 miles wide and 400 miles long in the central part of California. It runs from the Sacramento Valley in the north to the San Joaquin Valley in the south. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic period (about 160 million years ago) (California Geological Survey 2002).

b. Topography

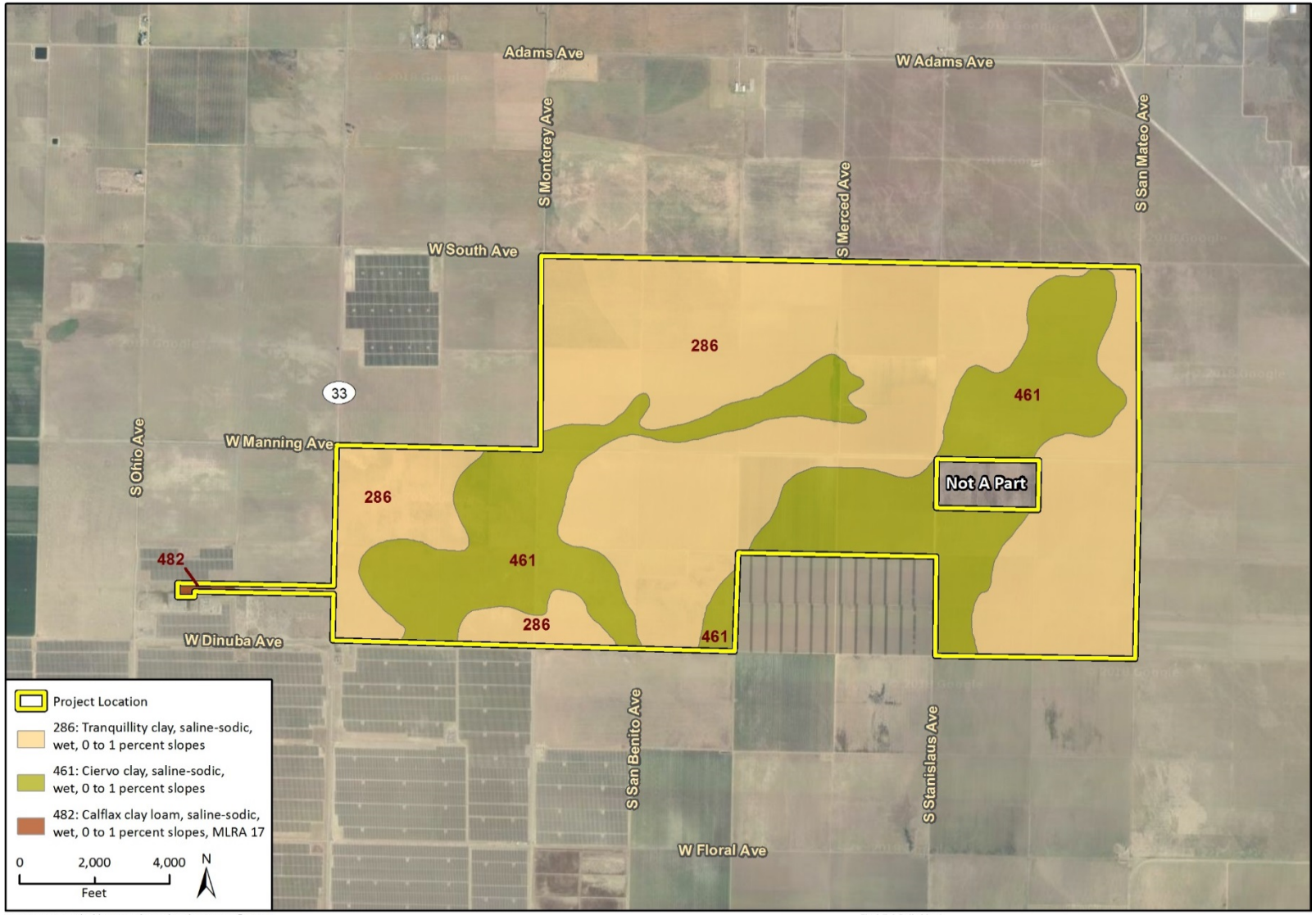
The topography of the Project site is generally flat. The site slopes gently from approximately 170 feet above mean sea level (amsl), in the northeast corner, to approximately 200 feet amsl in the southwest portion (Kleinfelder 2015).

c. Soils

Based on a review of soil survey mapping prepared by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), three soil units are identified on the site, shown in Figure 4.7-1. They include Tranquillity clay (66.42 percent), Ciervo clay (33.35 percent), and Calflax clay loam (0.23 percent). Table 4.7-1 summarizes on-site soil types and selected properties. On-site soils have slow to very slow permeability, moderate to very high shrink-swell potential, and high surface runoff rate on over 99 percent of the Project site.

The relative proportions of particle size in a soil determine the physical, and to some extent, chemical properties of the soil. For this reason, the relative proportions of different-sized particles in a soil are assessed when soils are mapped. From largest to smallest, soil particles are classified based on size as gravel, sand, silt, or clay. All silt and clay particles are less than 0.1 millimeter in diameter. Soil units called “clays” generally contain at least 40 percent clay-sized particles. Over 70 percent of soil mineral particles in all three mapped soil units on the Project site consist of silt and clay: Tranquillity clay consists of 51 percent clay and 35 percent silt; Ciervo clay consists of 41 percent clay and 34 percent silt; and Calflax clay loam consists of 29 percent clay and 43 percent silt. Based on mapped soil qualities, soils on the Project site have only a slight erosion hazard (NRCS 2018).

Figure 4.7-1 Soils Map



Imagery provided by Google and its licensors © 2018.
Additional data provided by California Department of Conservation, 2014.

Table 4.7-1 On-Site Soils and Soil Characteristics

Soil ID	Soil Type	Percent of Project Site	Permeability	Shrink-Swell Potential	Rate of Surface Runoff	Erosion Hazard
286	Tranquillity clay, saline-sodic, wet, 0 to 1 percent slopes	66.2	Somewhat Poorly Drained	Very High	High	Slight
461	Ciervo clay, saline-sodic, wet, 0 to 1 percent slopes	33.4	Moderately Drained	High	High	Slight
482	Calflax clay loam, saline-sodic, wet, 0 to 1 percent slopes, MLRA 17	0.4	Moderately Drained	Moderate	Low	Slight

Sources: Salem Engineering Group, Inc. 2018; NRCS 2002, 2003a, 2003b, 2018

Based on soil moisture, particle-size distribution, acidity, and electrical conductivity of the soils, all on-site soils have a high potential to corrode steel buried in soil and a high potential to corrode concrete, likely due to sulfates in the clays (NRCS 2018).

d. Geologic Hazards

The Project site is located in a moderately active geologic area of California in the Great Valley geomorphic province. This section discusses the hazards and/or adverse conditions associated with this geologic setting.

Faulting and Seismically Induced Ground Shaking

The Project site lies on the North American tectonic plate[1], approximately 35 miles east of the San Andreas Fault zone, which marks the boundary between the North American and Pacific plates. The Project site is not crossed by any known active faults (i.e., faults that have moved within the last 10,000 years) or designated Alquist-Priolo Earthquake Fault zones (California Department of Conservation [CDOC] 2017). The closest active faults to the Project site include the Nunez Fault, 25 miles south of the site; the creeping section of the San Andreas Fault, 35 miles west of the site; and the Ortigalita Fault, 35 miles northwest of the site. The San Andreas Fault is capable of producing earthquakes that would cause strong ground shaking at the site.

Land Subsidence and Settlement

Land subsidence is the gradual settling or sudden sinking of the earth's surface due to subsurface movement of earth materials. Compaction of subsurface, water-containing geologic layers is the primary cause of land subsidence (United States Geological Survey [USGS] 1999). Regional ground subsidence is typically caused by compaction of sub-surface water from petroleum or groundwater withdrawal. The soil compacts because the water or petroleum in the pore spaces is partially responsible for holding the ground up. Extraction of these resources results in consolidation or settlement of the underlying soils. Local subsidence or settlement may also occur when areas containing compressible soils are subjected to foundation or fill loads.

[1] A tectonic plate (also called lithospheric plate) is a massive, irregularly shaped slab of solid rock that moves as a unit. Interactions between neighboring tectonic plates generate earthquakes along the borders of the plates.

The San Joaquin Valley has a history of land subsidence due to groundwater pumping and related compaction of sand and clay layers. Maximum land subsidence during groundwater pumping from the 1920s to 1970 was more than 28 feet, and occurred approximately 10 miles north of the Project site, near Mendota (USGS 1999). Future subsidence depends on the extent of future groundwater withdrawals in the San Joaquin Valley, but it is considered likely (USGS 2013).

Liquefaction

Liquefaction is a process during which soil temporarily becomes fluid during intense and prolonged ground shaking or because of a sudden shock or strain. Liquefaction occurs typically in areas where the groundwater is less than 30 feet from the surface and where the soils are composed of poorly consolidated, fine to medium sand. Liquefaction-induced lateral spreading is the finite, lateral displacement of gently sloping ground from pore-pressure buildup or liquefaction in a shallow underlying deposit during an earthquake. The Project site is not located in a liquefaction hazard zone, but it is in an area of historic shallow groundwater, a situation that increases the potential for liquefaction hazard (CDOC 2010, Kleinfelder 2015). A geotechnical desktop review classified on-site soils as having a moderate to high liquefaction risk (Kleinfelder 2015; NRCS 2018).

Lateral Spreading and Collapse

Soil collapse can occur in soils characterized by low density and low moisture content. Soil grains in dry soil are not packed tightly together. The introduction of water to dry soil causes the soil structure to break, soften, disperse, or dissolve quickly. The larger soil grains then shift and shear against each other to re-orient into a denser configuration. This relatively rapid densification of the soil causes a net volume loss of the soil deposit, manifest at the ground surface as subsidence or settlement. Ground settlement can damage man-made structures such as foundations, pavements, concrete slabs, utilities, and irrigation works. On-site soils are predominantly clays, indicating little to no potential for soil collapse.

Expansive Soils

Expansive soils are soils that swell or shrink volumetrically in response to the addition or removal of water, respectively. Certain clays can accommodate additional water molecules in their mineral structure, and the presence of these clays in a soil generally determines how much the soil will expand with the addition of water. Expansion and contraction of expansive soils in response to changes in moisture content can cause movements that result in damage and/or distress to structures and equipment with shallow foundations. Effects of expansive soils are seen near the ground surface where changes in moisture content typically occur. Often, grading, site preparation, and backfill operations associated with subsurface structures can eliminate the potential for expansion. Soils on the Project site are primarily clays with moderate to high shrink-swell potential, which means they are classified as having a moderate to high expansion potential (Kleinfelder 2015; NRCS 2018).

Erosion

Erosion is a natural process whereby soil and highly weathered rock materials are worn away transported, most commonly by wind or water. Excessive soil erosion can lead eventually to damage of building foundations and roadways. In general, areas most susceptible to erosion are those that would be exposed during the construction phase when earthwork activities disturb soils and require stockpiling. Typically, the soil erosion potential is reduced once the soil is graded and covered with

concrete, structures, asphalt, or slope protection, but changes in drainage patterns can also cause areas to be susceptible to the effects of erosion.

Soils containing high amounts of silt are more easily eroded; while coarse-grained (sand and gravel) soils are generally less susceptible to erosion. Soils on the Project site have a low to moderate susceptibility to wind erosion (NRCS 2018).

e. Paleontological Setting

The Project site is located in the southern portion of the Great Valley geomorphic province, one of California's eleven geomorphic provinces (California Geological Survey 2002). The Great Valley is an elongated lowland, approximately 50 miles wide and 400 miles long. It is bounded to the east by the Sierra Nevada Range and to the west by the Coast Range. A relatively undeformed basin, the Great Valley rises from about sea level to approximately 400 feet in elevation at the north and south ends. The northern portion of the valley, referred to as the Sacramento Valley, is drained by the Sacramento River; the southern portion of the valley, referred to as the San Joaquin Valley, is drained by the San Joaquin River. Both rivers converge in the Central Valley and drain into San Francisco Bay and the Pacific Ocean via the Carquinez Strait. The Great Valley is predominantly alluvial, flood, and delta plains formed by these two major river systems.

During the entire Cenozoic and the later Mesozoic, the region persisted as a shallow marine embayment or other lowland (Norris and Webb 1990). Middle Tertiary deposition occurred in deeper water environments during the Oligocene and middle Miocene. By the late Cenozoic, much of the region consisted of shallow brackish and freshwater lakes, especially in the San Joaquin Valley. During the middle and late Pleistocene, the now extinct Lake Corcoran covered much of the northern portion of the San Joaquin Valley. The Great Valley is an asymmetrical synclinal trough with Mesozoic and Cenozoic aged sediments deposited on the Sierran (east side) and Franciscan (west side) granitic rock basement. The contact between the Sierran and Franciscan basement is concealed throughout virtually the entire Great Valley.

The paleontological sensitivity of the Project area varies based on the presence of geologic units at or below the surface. Geologic deposits of low paleontological sensitivity (Potential Fossil Yield Classification [PFYC] Class 2) are mapped at the surface on the Project site, and as such, fossils would not be expected at the surface; however, underlying Pleistocene aged sediments with moderate paleontological sensitivity (PFYC Class 3) could be impacted if excavations were sufficiently deep to disturb these sediments. In general, ground-disturbing activity exceeding five feet in depth has the potential to disturb geologic units with moderate paleontological sensitivity.

4.7.1.2 Regulatory Setting

a. Federal

No federal statutes, regulations, plans, or policies govern geology, soils, or paleontological resources on the Project site.

b. State

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act addresses geo-seismic hazards, other than surface faulting, and applies to public buildings and most private buildings intended for human occupancy. The Seismic

Hazards Mapping Act identifies and maps seismic hazard zones to assist cities and counties in preparing the safety elements of their general plans and encourages land use management policies and regulations that reduce seismic hazards. The Act mandated the preparation of maps delineating "Liquefaction and Earthquake-Induced Landslide Zones of Required Investigation." The Project site is not located in a mapped seismic hazard zone (CDOC 2017).

California Building Code

The California Building Code (CBC) is codified in Title 24 of the California Code of Regulations, Part 2, and was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, means of egress facilities, and general stability of buildings. The CBC regulates and controls the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, location, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The 2019 edition of the CBC was published by the California Building Standards Commission in July 2019 and took effect January 1, 2020. Seismic design provisions of the building code generally prescribe minimum lateral forces applied statically to the structure, combined with the gravity forces of the dead and live loads of the structure, which the structure then must be designed to withstand. The prescribed lateral forces are generally smaller than the actual peak forces associated with a major earthquake because it would be economically impractical to require higher standards for most structures. Consequently, structures should be able to resist (1) minor earthquakes without damage, (2) moderate earthquakes without structural damage but with some nonstructural damage, and (3) major earthquakes without collapse, but with some structural and nonstructural damage. Conformance to the current building code recommendations does not constitute any kind of guarantee that substantial structural damage would not occur in the event of a maximum magnitude earthquake. However, it is reasonable to expect that a structure designed in accordance with the seismic requirements of the CBC should not collapse in a major earthquake.

The updated CBC no longer cites the 1997 UBC Table 18-1-B for identifying expansive soils, but the significance criteria in Appendix G of the CEQA Guidelines still refers to this table. For purposes of analysis, this Draft EIR relies on the updated CBC section as provided below, which includes and adds to standards in the 1997 UBC Table 18-1-B.

1803.5.3 Expansive Soil

In areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Soils meeting all four of the following provisions shall be considered expansive, except that tests to show compliance with Items 1, 2 and 3 shall not be required if the test prescribed in Item 4 is conducted:

1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D 4318;
2. More than 10 percent of the soil particles pass a No. 200 sieve (75 micrometers), determined in accordance with ASTM D 422;
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422; and/or

4. Expansion index greater than 20, determined in accordance with ASTM D 4829.

Additionally, the CBC contains design criteria for expansive soils in Section 1808.6, which includes provisions for foundation types, including slab-on-ground foundations, and expansive soil removal and stabilization techniques.

NPDES General Construction Permit

As described in greater detail in Section 4.10, *Hydrology and Water Quality*, the Central Valley Regional Water Quality Control Board administers the National Pollutant Discharge Elimination System (NPDES), which protects water quality during construction activities disturbing one or more acres of land. The NPDES program requires the preparation of a risk assessment and a Storm Water Pollution Prevention Plan (SWPPP) under the NPDES General Construction Permit prior to beginning construction. The risk assessment and SWPPP must be prepared by a state-qualified SWPPP Developer. The SWPPP provides specific construction-related best management practices (BMPs) to prevent soil erosion and loss of topsoil. Section 4.10, *Hydrology and Water Quality,* provides additional discussion of SWPPP requirements.

c. Local

Fresno County General Plan

The Health and Safety Element of the Fresno County General Plan outlines Fresno County's planning strategies regarding emergency management and response, fire hazards, flood hazards, seismic and geological hazards, airport hazards, hazardous materials, and noise (Fresno County 2000). The following policies of the Health and Safety Element are relevant to seismic and geological hazards.

- **Policy HS-D.3:** The County shall require that a soils engineering and geologic-seismic analysis be prepared by a California-registered engineer or engineering geologist prior to permitting development, including public infrastructure projects, in areas prone to geologic or seismic hazards (i.e., fault rupture, groundshaking, lateral spreading, lurchcracking, fault creep, liquefaction, subsidence, settlement, landslides, mudslides, unstable slopes, or avalanche).
- **Policy HS-D.4:** The County shall require all proposed structures, additions to structures, utilities, or public facilities situated within areas subject to geologic-seismic hazards as identified in the soils engineering and geologic-seismic analysis to be sited, designed, and constructed in accordance with applicable provisions of the Uniform Building Code (Title 24 of the California Code of Regulations) and other relevant professional standards to minimize or prevent damage or loss and to minimize the risk to public safety.
- **Policy HS-**D.5: Pursuant to the Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code, Chapter 7.5), the County shall not permit any structure for human occupancy to be placed within designated Earthquake Fault Zones unless the specific provisions of the Act and Title 14 of the California Code of Regulations have been satisfied.
- **Policy HS-D.8:** The County shall require a soils report by a California-registered engineer or engineering geologist for any proposed development, including public infrastructure projects, that requires a County permit and is located in an area containing soils with high "expansive" or "shrink-swell" properties. Development in such areas shall be prohibited unless suitable design and construction measures are incorporated to reduce the potential risks associated with these conditions.

- **Policy HS-D.9:** The County shall seek to minimize soil erosion by maintaining compatible land uses, suitable building designs, and appropriate construction techniques. Contour grading, where feasible, and revegetation shall be required to mitigate the appearance of engineered slopes and to control erosion.

Fresno County Solar Guidelines

Fresno County has prepared solar development guidelines that contain the following requirement relevant to geology and soils:

> Identify (with supporting data) the current soil type and mapping units of the parcel pursuant to the standards of the California State Department of Conservation and the Natural Resources Conservation Service (Fresno County 2017).

Fresno County Department of Public Works and Planning, Building and Safety Division

The Environmental Health Division of the Fresno County Department of Public Health is responsible for enforcing the California Plumbing Code, International Association of Plumbing and Mechanical Officials Installation Standards, Fresno County Ordinance Code – Chapter 15.20 Plumbing Code, California Regional Water Quality Control Board – Central Valley Region – Guidelines for Waste Disposal From Land Developments, and the U.S. Department of Health, Education, and Welfare "Manual of Septic Tank Practice" as they pertain to installation of septic systems. As part of the requirements, applicants proposing to install septic systems must conduct test holes to identify subsurface conditions and conduct percolation tests to adequately demonstrate the range of percolation rates within the primary disposal area.

4.7.2 Impact Analysis

4.7.2.1 Methodology and Significance Thresholds

a. Methodology

Potential effects with respect to geology and soils are assessed based upon existing publications and maps completed by federal and state agencies, such as the USGS and the California Geological Survey (formerly the California Division of Mines and Geology). The potential for damage to proposed structures or increased risk of injury due to geologic hazards is analyzed using available data from the aforementioned sources. The severity and significance of geology and soils impacts are analyzed in the context of existing regulations and policies aimed at abating potential impacts to soil resources and from geologic and seismic hazards.

The evaluation of potential Project effects to paleontological resources is based, in part, on the findings in the Project-specific Paleontological Resources Assessment Report (Rincon 2020). The purpose of the evaluation was to identify any paleontological resources that may be present on the Project site. The Paleontological Resources Assessment Report involved a literature review, geologic map review, and museum records search.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would result in a significant impact if it would:

a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
   i. 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,
   ii. Strong seismic ground shaking,
   iii. Seismic-related ground failure, including liquefaction, and/or
   iv. Landslides;
b. Result in substantial soil erosion or the loss of topsoil;
c. 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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;
e. 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; and/or
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

The Initial Study in Appendix A determined the Project would result in no impact with respect to surface rupture hazards (threshold a.i) or landslide hazards (threshold a.iv). Therefore, these issues are not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for an impact analysis discussion of these thresholds.

4.7.2.2 Project Impacts and Mitigation Measures

Threshold a.ii:	Whether the Project would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking

Impact GEO-1 THE PROJECT WOULD NOT DIRECTLY OR INDIRECTLY CAUSE ADVERSE EFFECTS, INCLUDING RISK OF LOSS, INJURY, OR DEATH RELATED TO STRONG SEISMIC GROUND SHAKING. THE PROJECT WOULD NOT EXACERBATE RISKS ASSOCIATED WITH SEISMICITY AND STRUCTURAL DESIGN. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The Solar Facility could include an O&M building that would be staffed for operational activities. Should strong seismic ground-shaking occur at the Project site, damage to the PV modules, the O&M building, or other ancillary facilities could result in potential damage and/or injury to on-site staff.

The closest active faults to the Project site are the Nunez Fault, located 25 miles south, the Creeping Section of the San Andreas Fault, located 35 miles southwest, and the Ortigalita Fault, located 35 miles northwest. Based on the proximity of several active or potentially active faults, the Project site

is likely to experience ground-shaking activity as a result of seismic activity during the life of the Project and could be subject to ground-shaking hazards.

As described in Section 4.7.1.2, *Regulatory Setting*, the Applicant is required to design Project infrastructure to withstand substantial ground shaking in accordance with applicable CBC (24 California Code of Regulations Section 1803) seismic design standards, as adopted by Fresno County, and as recommended by a California registered professional geotechnical engineer in the site-specific geotechnical review. Prior to the issuance of grading permits, the Applicant would be required to retain a licensed geotechnical engineer to design the Project facilities to withstand probable seismically induced ground shaking at the site. All grading and construction on site would adhere to the specifications, procedures, and conditions contained in the final design plans, which would be fully compliant with the seismic recommendations by the California-registered professional geotechnical engineer, in accordance with California and Fresno County Building Code requirements. The required measures would encompass site preparation, foundation specifications, and protection measures for buried metal. The final structural design would be subject to approval and follow-up inspection by the Fresno County Building and Safety Team. Final design requirements would be provided to the on-site construction supervisor and the Fresno County Building Inspector to ensure compliance. Implementation of these existing regulations and policies aimed at abating potential impacts to soil resources and from geologic and seismic hazards would avoid substantial adverse effects associated with strong seismic ground shaking and potential impacts would be less than significant.

PG&E Improvements

Similar to the Solar Facility, the PG&E Improvements would be required to withstand substantial ground shaking in accordance with applicable CBC (24 California Code of Regulations Section 1803) seismic design standards, as adopted by Fresno County, and as recommended by a California registered professional geotechnical engineer in the site-specific geotechnical review. Prior to the issuance of grading permits, the Applicant would be required to retain a licensed geotechnical engineer to design the PG&E Improvements to withstand probable seismically induced ground shaking at the site. Compliance with existing regulations would ensure that potential PG&E Improvement effects from seismic ground shaking are less than significant.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects from seismic ground shaking and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold a.iii:	Whether the Project would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction
Threshold c:	Whether the Project would 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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse

Impact GEO-2 THE PROJECT COULD CAUSE ADVERSE EFFECTS, INCLUDING RISK OF LOSS, INJURY, OR DEATH RELATED TO GROUND FAILURE, INCLUDING LIQUEFACTION. THE PROJECT WOULD NOT EXACERBATE THE RISK OF GROUND FAILURE AND WOULD BE CONSTRUCTED IN COMPLIANCE WITH APPLICABLE CODES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Solar Facility

The physical soil properties on the Project site indicate no risks for landslides, little-to-no potential for lateral spreading and soil collapse, and moderate-to-high potential for liquefaction or settling caused by an earthquake, which could result in potential adverse effects relating to seismic-related ground failure. In addition, the Project area has a history of land subsidence due to groundwater pumping and related compaction of sand and clay layers, and future subsidence is considered likely.

As discussed under Impact GEO-1, the Applicant is required to design proposed improvements in accordance with applicable CBC seismic design standards, as adopted by Fresno County, and as recommended by a California-registered professional geotechnical engineer in the site-specific geotechnical review. Without this step, potential impacts could be significant.

Liquefaction and subsidence hazards are addressed through site preparation measures or foundation design measures, such as removal and replacement of liquefiable soils, densification of these soils, or specific foundation design recommendations, recommended by a structural engineer. Implementation of these measures in accordance with building code requirements can effectively reduce the hazard to minimize any potential for substantive damage. Therefore, this impact would be significant but mitigable.

The final structural design would be subject to approval and follow-up inspection by the Fresno County Building and Safety Team. Final design requirements would be provided to the on-site construction supervisor and the Fresno County Building Inspector to ensure compliance. Implementation of these building code requirements and local agency enforcement would reduce impacts related to liquefaction to less than significant.

Implementation of the Solar Facility would not exacerbate existing hazards, as it would not make earthquakes more likely, nor would it construct structures that would expose additional people to risk of harm from seismic hazards.

PG&E Improvements

The PG&E Improvements would be located on the far western portion of the Project site. Similar to the Solar Facility, there is moderate-to-high potential for liquefaction or settling caused by an earthquake, which could result in potential adverse effects relating to seismic-related ground failure to the PG&E Improvements. Impacts related to seismic ground failure and unstable geologic soils would be potentially significant.

Geologic, seismic, and soil hazards and impacts discussed above would be the same for this portion of the site, which contains approximately 50 percent Calflax clay loam and 50 percent Tranquillity clay soil types as shown in Figure 4.7-1; therefore, all impact conclusions, described above regarding potential soil hazards, including those related to seismicity, liquefaction, soil erosion, and expansive soil, are applicable to the PG&E Improvements, as well as Mitigation Measure GEO-2. The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to soil hazards, including those related to seismicity, liquefaction, soil erosion, and expansive soil beyond those described above and no additional mitigation is required.

Mitigation Measures

The following mitigation measure is applicable to the Solar Facility and the PG&E Improvements:

GEO-2 Reduction of Liquefaction Potential

Prior to issuance of a grading permit, the Applicant shall submit to the County Department of Public Works and Planning for review and approval, a ground improvement program prescribed by a qualified engineer to minimize liquefaction potential on the site. Measures to reduce liquefaction impacts could include, but may not be limited to, site preparation measures, foundation design measures such as removal and replacement of liquefiable soils, or others recommended by a structural engineer.

Significance After Mitigation

With implementation of Mitigation Measure GEO-2, impacts related to liquefaction would be reduced to less than significant levels.

Threshold b:	Whether the Project would result in substantial soil erosion or the loss of topsoil

Impact GEO-3 THE PROJECT WOULD NOT RESULT IN SUBSTANTIAL SOIL EROSION OR LOSS OF TOPSOIL. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Construction and decommissioning of the Solar Facility would result in ground disturbing activities, which increases the likelihood of erosion by breaking up large soil clods into smaller particles with a greater surface area more easily dislodged by stormwater runoff or wind. As the site is nearly flat and has been graded/tilled in the past, Project-related grading would be minimal and occur only as necessary to level dips, but erosion could occur during construction.

Construction and decommissioning of the Solar Facility would disturb more than 1.0 acre, and therefore would be subject to the requirements of the Construction General NPDES Program permit. As part of these permit requirements, the Applicant must prepare and implement a SWPPP (described in Section 2.11.1.5*, Erosion and Sediment Control and Pollution Prevention*) that would be subject to approval from the Central Valley Regional Water Quality Control Board and Fresno County. The SWPPP would specify BMPs to prevent disturbed soils (such as topsoil) from moving off site. Specific BMPs for the construction and decommissioning phase would be identified during completion and County review of the SWPPP. However, typical BMPs to be implemented could include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil properly;
- Installation of a stabilized construction entrance/exit and stabilization of disturbed areas;
- Implementing erosion controls; and
- Properly managing construction materials.

Given the relatively flat, pervious surface of the Project site, it is unlikely that soil erosion from water runoff would occur with implementation of the construction and decommissioning SWPPPs and the required BMPs. As a result, the Project would have less-than-significant impacts related to erosion during construction and decommissioning.

Project operations would include the periodic cleaning of the panels with water, but this is not expected to result in soil erosion because of the infrequency of water use (not likely to be more than semi-annually) and limited volumes of water involved with panel washing. Water would fall to the ground, infiltrate into the subsurface, and would not run off or generate substantial erosion or soil loss. This impact would be less than significant. For additional discussion of erosion-related impacts, see Section 4.10, *Hydrology and Water Quality,* of this EIR.

PG&E Improvements

Construction of the PG&E Improvements would also require ground disturbing activities which could result in soil erosion. PG&E Improvements would also be subject to the requirements of the Construction General NPDES Program permit and be included in the SWPPP developed for the project, which would specify BMPs to prevent disturbed soils (such as topsoil) from moving off site. As a result, the PG&E Improvements would have less-than-significant impacts related to erosion during construction.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to erosion or loss of topsoil and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold d:	Whether the project would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property

Impact GEO-4 THE PROJECT WOULD NOT CREATE SUBSTANTIAL DIRECT OR INDIRECT RISKS TO LIFE OR PROPERTY BY BEING LOCATED ON EXPANSIVE SOILS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Soils present at the site may have a moderate to high potential for expansion (Kleinfelder 2015; NRCS 2018). If not addressed during the construction and site preparation phase, expansive soils that may be present could, over time, cause ground cracks or fissures that can damage building foundations and other improvements. As noted under Impact GEO-1, the Project would be designed to comply with applicable building codes and structural improvement requirements that would

include addressing any expansive soil hazards, as required by the provisions of the CBC. Use of engineered fill or treatment of expansive soils, both common geotechnical strategies, has proven very effective to minimize this hazard. As required by the CBC and Fresno County Building Code requirements, construction of the Project would be done in accordance with a final design-level geotechnical report that includes final site preparation measures to address any identified expansive soils on-site. With adherence to all applicable building codes, potential impacts associated with expansive soils would be avoided and potential impacts would be less than significant.

PG&E Improvements

Similar to the Solar Facility, soils in the PG&E Improvements area may have a moderate to high potential for expansion, which could impact the infrastructure (Kleinfelder 2015; NRCS 2018). Similar to the Solar Facility, the PG&E Improvements would be designed to comply with applicable building codes and structural improvement requirements that would include addressing any expansive soil hazards, as required by the provisions of the CBC. Compliance with applicable building code requirements would ensure impacts to PG&E Improvements from expansive soils would be less than significant.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to expansive soil and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold e:	Whether the Project would 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

Impact GEO-5 THE PROJECT SITE WOULD HAVE SOILS CAPABLE OF ACCOMMODATING A SEPTIC OR OTHER ALTERNATIVE WASTE WATER DISPOSAL SYSTEM. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The Solar Facility may include the construction of an O&M building that would require installation of a septic system for disposal of wastewater. The septic system would consist of an approximately 1,000-gallon septic tank that would discharge effluent to an approximately 420-foot disposal trench consisting of seven 60-foot long trenches. If not designed appropriately, soils could be incapable of adequately supporting disposal of the wastewater produced at the O&M building.

Salem Engineering Group, Inc. conducted a review of on-site septic disposal feasibility for the Project site in 2018, included as Appendix H2. According to Salem Engineering, based on the analysis of the three soils on-site, described in Section 4.7.1.1, only one (Tranquillity clay) would not be considered suitable for on-site septic disposal. While there may be constraints in siting a septic system and leach field on that soil type, Ciervo clay and Calflax clay loam are better-drained soils that would be suited for future on-site septic disposal investigations.

The Project would be required to adhere to the Fresno County Environmental Health Department septic system permit requirements, specifically the percolation rate requirements of the Fresno County Ordinance 15.20 Plumbing Code and the Fresno County Local Area Management Program, which set out procedures for the design, installation, and operation of on-site wastewater treatment systems (Fresno County 2017). Adherence to these permitting requirements would ensure the proposed septic system would only be located on soils capable of adequately supporting it (i.e., Ciervo clay and Calflax clay loam). Therefore, potential impacts would be less than significant.

PG&E Improvements

PG&E Improvements would not require the construction or use of a septic rank or alternative wastewater disposal systems. Therefore, there would be no impacts on soils from wastewater infrastructure from PG&E Improvements. Therefore, the Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to wastewater infrastructure and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold f:	Whether the Project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature

Impact GEO-6 GROUND DISTURBING ACTIVITIES ASSOCIATED WITH THE PROJECT HAVE THE POTENTIAL TO UNEARTH OR IMPACT PREVIOUSLY UNIDENTIFIED PALEONTOLOGICAL RESOURCES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Solar Facility

As described above, the results of the paleontological resource assessment identify the surface of the Project site as having geologic deposits of low paleontological sensitivity (PFYC Class 2). However, deeper ground-disturbing activities exceeding 5 feet in depth have the potential to impact Pleistocene-aged sediments with moderate paleontological sensitivity (PFYC Class 3) and other previously unidentified paleontological resources. The majority of proposed construction excavations would be limited to less than 5 feet in depth, but some excavations, such as those undertaken for the installation of collector poles and dead-end structures, may reach depths of 20 feet or more. Therefore, since ground-disturbing activities will likely exceed 5 feet in depth construction of the Project has the potential to result in a significant impact to previously undiscovered paleontological resources.

PG&E Improvements

PG&E Improvements may require ground-disturbing activities which exceed 5 feet in depth and therefore have the potential to impact Pleistocene-aged sediments with moderate paleontological sensitivity (PFYC Class 3) and other previously unidentified paleontological resources. Since ground-disturbing activities would likely exceed 5 feet in depth for construction of PG&E Improvements, impacts to previously undiscovered paleontological resources would be potentially significant.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects to paleontological resources beyond those described in this section and no additional mitigation would be required.

Mitigation Measures

The following mitigation measures are applicable to the Solar Facility and the PG&E Improvements:

GEO-6(a) Retention of Qualified Paleontologist

Prior to initial ground disturbance, the Applicant shall retain a Qualified Paleontologist, defined as a paleontologist who meets the Society of Vertebrate Paleontology's (SVP) standards (SVP 2010), to direct the implementation of Mitigation Measures GEO-6(b) through GEO-6(d). A Qualified Paleontologist is defined by the SVP standards as an individual with an MS or PhD in paleontology or geology experienced with paleontological procedures and techniques, knowledgeable in the geology of California and the San Joaquin Valley, and who has worked as a paleontological mitigation project supervisor for a least one year.

GEO-6(b) Paleontological Mitigation and Monitoring Program

Prior to construction activity the Qualified Paleontologist shall prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground-disturbance activity for the proposed Project. This program shall outline the procedures for construction staff WEAP training, paleontological monitoring extent and duration, salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications.

GEO-6(c) Paleontological Worker Environmental Program

Prior to the start of construction, the Qualified Paleontologist or his or her designee, shall conduct WEAP training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The WEAP shall be conducted at a preconstruction meeting when the Qualified Paleontologist is present. In the event of a fossil discovery by construction personnel, all work in the immediate vicinity of the find shall cease and a qualified paleontologist shall be contacted to evaluate the find before restarting work in the area. If it is determined the fossil(s) is(are) scientifically significant, the qualified paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources.

GEO-6(d) Paleontological Monitoring and Reporting

Prior to the start of construction activity, the Qualified Paleontologist retained under Mitigation Measure GEO-6(a) shall implement the Paleontological Mitigation and Monitoring Program, as follows:

1. **Paleontological Monitoring.** Ground disturbing construction activities (including grading, trenching, foundation work and other excavations) exceeding 5 feet in depth shall be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. Implementation of the Paleontological Mitigation and Monitoring Program shall be supervised by the Qualified Paleontologist. Monitoring shall be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the

Qualified Paleontologist. If the Qualified Paleontologist determines that full-time monitoring is no longer warranted, he or she may authorize, after approval of the County, that monitoring be reduced to periodic spot-checking or ceased entirely. Monitoring shall be reinstated if any new or unforeseen deeper ground disturbances are required and reduction or suspension would need to be reconsidered by the Qualified Paleontologist. Ground disturbing activity that does not exceed 5 feet in depth shall not require paleontological monitoring.

2. **Salvage of Fossils.** If fossils are discovered, the Qualified Paleontologist or paleontological monitor shall recover them. Typically fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the paleontologist shall have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.
3. **Preparation and Curation of Recovered Fossils.** Once salvaged, significant fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the University of California Museum of Paleontology), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Qualified Paleontologist.
4. **Final Paleontological Mitigation Report.** Upon completion of ground disturbing activity (and curation of fossils if necessary), the Qualified Paleontologist shall prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report shall include discussion of the location, duration, and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.

Significance After Mitigation

With implementation of Mitigation Measures GEO-6(a) through GEO-6(d), impacts to paleontological resources would be reduced to less than significant levels through worker training, paleontological monitoring, and requirements to follow if resources are discovered.

4.7.2.3 Cumulative Impacts

a. Geology and Soils

The Project site is the cumulative geographic scope for seismic shaking, seismic-related ground failure, land instability, and expansive soil. These impacts would not worsen or be worsened by similar impacts of cumulative projects because such impacts are site-specific and would only have the potential to combine with impacts of the Project if they occurred in the same location as the Project.

For soil erosion, cumulative impacts can result from the combined effects of the construction of multiple projects within the same watershed as the Project. The Project site is in the San Joaquin watershed. All the cumulative projects listed in Table 3-1 are also in the San Joaquin watershed; thus, the geographic scope for soil erosion impacts includes all the projects listed therein.

Development of the Project, with implementation of the regulatory requirements discussed above, would result in less than significant impacts related to exposing persons or structures to geologic,

soils, or seismic hazards. Similar to the Project, other projects in the area would be required to adhere to the same California and Fresno County Building Codes that 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 reasonably foreseeable development in the area, would not result in a cumulatively significant impact by exposing people or structures to risk related to geologic hazards, soils, and/or seismic conditions. Therefore, the Project would result in less than significant cumulative impacts related to geology and soils.

Surficial deposits, namely erosion and sediment deposition, can be cumulative, however, depending on the type and amount of development proposed in a given geographical area. The cumulative setting for soil erosion consists of existing, planned, proposed, and reasonably foreseeable land use conditions in the region. However, construction constraints are primarily based on site-specific soil characteristics and topography. Individual projects are required to comply with applicable codes, standards, and permitting requirements (e.g., preparation of a SWPPP) to avoid erosion impacts. Development of the project site has the potential to contribute to soil erosion and loss of topsoil during construction. These potential impacts would be minimized through the implementation of the SWPPP and BMPs for all projects over one acre in size. Impacts associated with erosion are addressed on a project-by project basis, which would reduce the overall cumulative impact to a less than significant level.

b. Paleontological Resources

The geographic scope for cumulative impacts to paleontological resources comprises a 5-mile radius from the Project site. This geographic scope of analysis is appropriate because the paleontological resources within this radius are expected to be similar to those that occur on the Project site because their proximity, similar environments, landforms, and hydrology are expected to have resulted in similar land uses over time. Similar geology within this vicinity would likely yield fossils of similar sensitivity and quantity.

The temporal scope for cumulative impacts to paleontological resources would be the duration of the Project when ground-disturbing activities occur. In this context, the incremental impacts of the Project could combine with similar incremental impacts of other projects in the cumulative scenario to cause or contribute to a significant cumulative impact if the applicable criteria in Section 4.7.1.2, *Methodology and Significance Thresholds*, were exceeded.

The Project, in conjunction with other cumulative projects in the vicinity, would have the potential to adversely impact additional paleontological resources. These projects include the Luna Valley Solar I, Heartland 1 and 2, and Sonrisa Solar projects. As noted previously, implementation of project-level mitigation measures, that would require cessation of activities and would specify the handling of resources in the event of discovery, would reduce the incremental contribution of the Project to any potential cumulative impact. Additionally, cumulative construction impacts related to unknown paleontological resources would be similar for cumulative projects, including the nearby solar and renewable energy projects, and would be addressed on a project-by-project basis. As such, the potential incremental effects of the Project would not be cumulatively considerable.

4.8 Greenhouse Gas Emissions

This section identifies and evaluates issues related to greenhouse gas (GHG) emissions in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methodology used to evaluate potential impacts, and the results of the impact analysis. The analysis presented in this section is based in part on Project-specific GHG emissions modeling results included in Appendix D.

4.8.1 Setting

4.8.1.1 Environmental Setting

a. Climate Change and Greenhouse Gases

Gases that trap heat in the atmosphere are known as greenhouse gases (GHG). GHGs allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation that warms the air. The process is similar to the effect greenhouses have in raising the internal temperature of the structure. Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the Earth's temperature, but emissions from human activities (such as fossil fuel-based electricity production and the use of motor vehicles) have elevated the concentration of GHGs in the atmosphere. Scientists agree that this accumulation of GHGs has contributed to an increase in the temperature of the Earth's atmosphere and to global climate change. Global climate change is a change in the average weather on Earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human activities, most scientists agree there is a direct link between increased emissions of GHGs and long term global temperature increases.

The principal GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons, and hydrofluorocarbons. CO_2 is the most common reference gas for climate change. To account for the warming potential of GHGs, GHG emissions often are quantified and reported as CO_2 equivalents (CO_2e). For example, SF_6 is a GHG commonly used in the utility industry as an insulating gas in circuit breakers and other electronic equipment. SF_6, while making up a small fraction of the total GHGs emitted annually, worldwide, is a much more potent GHG with 23,900 times the global warming potential as CO_2, which has a global warming potential of 1. Large emission sources are reported in million metric tons (MMT) of CO_2e.[1]

b. Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources though potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends show that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The observed global mean surface temperature from 2006 to 2015 was approximately 33 degree

[1] The term metric ton is commonly used in the U.S. to refer to the metric system unit, tonne, defined as a mass equal to 1,000 kilograms. A metric ton is approximately 1.1 short tons and approximately 2,205 pounds.

Fahrenheit (°F) higher than the average global mean surface temperature over the period from 1850 to 1900. Furthermore, several independently analyzed data records of global and regional Land-Surface Air Temperature obtained from station observations concur that Land-Surface Air Temperature, as well as sea surface temperatures, have increased. Due to past and current activities, anthropogenic GHG emissions are increasing global mean surface temperature at a rate of 32°F per decade. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (Intergovernmental Panel on Climate Change 2014 and 2018).

According to *California's Fourth Climate Change Assessment*, statewide temperatures from 1986 to 2016 were approximately 1 degree Fahrenheit (°F) to 2°F higher than those recorded from 1901 to 1960. Potential impacts of climate change in California may include loss in water supply from snow pack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years (State of California 2018). While there is growing scientific consensus about the possible effects of climate change at global and statewide levels, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. In addition to statewide projections, *California's Fourth Climate Change Assessment* includes regional reports that summarize climate impacts and adaptation solutions for nine regions of the state, as well as regionally-specific climate change case studies (State of California 2018). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Air Quality

Higher temperatures, which are 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 also its indirect effects, are uncertain. As temperatures have increased in recent years, the area burned by wildfires throughout the state has increased, and wildfires have been occurring at higher elevations in the Sierra Nevada Mountains (State of California 2018). If higher temperatures continue to be accompanied by an increase in the incidence and extent of large wildfires, air quality would worsen. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. 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 (California Natural Resources Agency 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future precipitation trends and water supplies in California. For example, many southern California cities have experienced their lowest recorded annual precipitation twice within the past decade; however, in a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008). This uncertainty regarding future precipitation trends complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. However, the average early spring snowpack in the western United States, including the Sierra Nevada Mountains, decreased by about ten percent

during the last century. During the same period, sea level rose over 5.9 inches along the central and southern California coasts (State of California 2018). The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. A warmer climate is predicted to reduce the fraction of precipitation falling as snow and result in less snowfall at lower elevations, thereby reducing the total snowpack (DWR 2008; State of California 2018). The State of California projects that average spring snowpack in the Sierra Nevada and other mountain catchments in central and northern California will decline by approximately 66 percent from its historical average by 2050 (California 2018).

Hydrology and Sea Level Rise

As discussed above, climate change 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 potential for salt water intrusion. Climate change has the potential to induce substantial sea level rise in the coming century (State of California 2018). The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys, and land gauges, was approximately 0.13 inch per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization 2013). As a result, global mean sea levels averaged over the last decade were about eight inches higher than those of 1880 (World Meteorological Organization 2013). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent Intergovernmental Panel on Climate Change report predicts a mean sea level rise of 10 to 37 inches by 2100 (Intergovernmental Panel on Climate Change 2018). A rise in sea levels could completely erode 31 to 67 percent of southern California beaches, result in flooding of approximately 370 miles of coastal California highways during 100-year storm events, jeopardize California's water supply due to salt water intrusion, and induce groundwater flooding and/or exposure of buried infrastructure (California 2018). In addition, increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $50 billion annual agricultural industry that produces over a third of the country's vegetables and two-thirds of the country's fruits and nuts (California Department of Food and Agriculture 2018). Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, certain regions of agricultural production could experience water shortages of up to 16 percent; water demand could increase as hotter conditions lead to the loss of soil moisture; crop-yield could be threatened by water-induced stress and extreme heat waves; and plants may be susceptible to new and changing pest and disease outbreaks (State of California 2018). In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (California Climate Change Center 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on global and local scales. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the annual average maximum daily temperatures in California could rise by 4.4 to 5.8°F in the next 50 years and by 5.6 to 8.8°F in the next century (State of California 2018). Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals related to (1) timing of ecological events; (2) geographic distribution and range; (3) species' composition and the incidence of nonnative species within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan 2006; State of California 2018).

c. Emissions

Since 1990, U.S. GHG emissions have increased by about 4 percent. From year to year, emissions can rise and fall due to changes in the economy, the price of fuel, and other factors. Based on the California Air Resources Board's (CARB) California Greenhouse Gas Inventory for 2000-2017, California produced 424 MMT of CO_2e in 2017 (CARB 2019). The major source of GHGs in California is associated with transportation, contributing 40 percent of the state's total GHG emissions. The industrial sector is the second largest source, contributing 21 percent of the state's GHG emissions. Electric power accounted for approximately 15 percent of the total emissions (CARB 2019). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate which requires less direct and indirect fuel use from heating and cooling. CARB has projected that statewide unregulated GHG emissions for the year 2020[2] will be 509 MMT of CO_2e (CARB 2018b). These projections represent the emissions expected to occur in the absence of any GHG reduction actions. Table 4.8-1 presents California's GHG emissions profile from 2011 to 2017.

Table 4.8-1 California GHG Emissions (MMT CO_2e)

Emission Inventory Category	2011	2012	2013	2014	2015	2016	2017	% of 2017 Total
Transportation	162	161	161	162	166	169	170	40%
Electric Power	88	95	90	88	84	69	62	15%
Commercial and Residential	46	43	44	37	38	39	41	10%
Industrial	91	91	94	94	92	90	89	21%
Recycling and Waste	8	8	9	9	9	9	9	2%
High Global Warming Potential	15	16	17	18	19	20	20	5%
Agriculture	35	36	35	36	34	34	32	8%
Total Gross Emissions	**444**	**450**	**448**	**444**	**441**	**429**	**424**	**100%**

Notes: Numbers have been rounded to nearest million metric ton.

Source: CARB 2019

[2] The Notice of Preparation issued for this Environmental Impact Report (EIR) noted earlier construction dates. The technical analyses prepared for the project were based on earlier construction dates beginning in 2020 and ending in 2021. The construction period, phasing, and means and methods of construction would remain the same, thus the impacts analyzed under those earlier construction dates would continue to be valid.

4.8.1.2 Regulatory Setting

a. Federal

U.S. Environmental Protection Agency "Endangerment" and "Cause or Contribute" Findings

The U.S. Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al*. ([2007] 549 U.S. 05-1120) held that the United States Environmental Protection Agency (USEPA) has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act. The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. In 2012, the USEPA issued a Final Rule that establishes the GHG permitting thresholds that determine when federal Clean Air Act permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities.

In 2014, the U.S. Supreme Court in *Utility Air Regulatory Group v. EPA* (134 S. Ct. 2427 [2014]) held 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 New Source Review Prevention of Significant Deterioration or Title V permit. The Court also held that New Source Review Prevention of Significant Deterioration permits otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

b. State

The legal framework for GHG emission reduction in California is built upon Executive Orders, legislation, and regulations. The major components of California's climate change initiative are summarized below.

California Advanced Clean Cars Program

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, USEPA granted the waiver of Clean Air Act preemption to California for its GHG emission standards for motor vehicles beginning with the 2009 model year. Pavley I regulates model years from 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles, Zero Emissions Vehicles, and Clean Fuels Outlet programs, and would provide major reductions in GHG emissions. By 2025, when the rules will be implemented fully, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (CARB 2011).

Executive Order S-3-05

In 2005, the governor issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below

1990 levels (California Environmental Protection Agency [CalEPA] 2006). In response to EO S-3-05, CalEPA created the Climate Action Team, which in March 2006 published the Climate Action Team Report (CalEPA 2006). The 2006 Climate Action Team Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These strategies could be implemented by various state agencies to ensure the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light-duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, and so on. In April 2015, the governor issued EO B-30-15, calling for a new target of 40 percent below 1990 levels by 2030.

Assembly Bill 32 and the California Climate Change Scoping Plan

AB 32 outlines California's major initiative for reducing GHG emissions; called the "California Global Warming Solutions Act of 2006," AB 32 was signed into law in 2006; it codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020, and requires CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. CARB approved the Scoping Plan on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan have been adopted (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) since approval of the Scoping Plan.

In 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines CARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 statewide goals. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the state's longer-term GHG reduction strategies with other state policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (CARB 2018c).

The 2017 Scoping Plan Update was adopted on December 14, 2017. The Scoping Plan Update addresses the 2030 target established by Senate Bill (SB) 32 as discussed below, and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include increasing the use of renewable energy in the state, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of methane emissions from agricultural and other wastes (CARB 2017).

Senate Bill 97

SB 97, signed in 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 375

SB 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020

and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). In 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035 and the updated GHG emission reduction targets took effect later that year. The Fresno Council of Governments (FCOG) is the federally recognized Metropolitan Planning Organization for Fresno County.

The FCOG is the regional planning agency for Fresno County and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. FCOG most recently prepared the *2018 Regional Transportation Plan and Sustainable Communities Strategy* (2018 RTP/SCS) for the region. In September 2010, CARB adopted the first SB 375 targets for the regional Metropolitan Planning Organizations. The targets for the FCOG are a 6 percent reduction in emissions per capita by 2020 and a 13 percent reduction by 2035. Achieving these goals through adoption of an SCS is the responsibility of the Metropolitan Planning Organizations. FCOG adopted its latest RTP/SCS in 2018. The plan quantified a 5 percent reduction by 2020 and a 10 percent reduction by 2035 (FCOG 2018). In 2018, CARB accepted FCOG's quantification of GHG reductions and its determination the SCS, if implemented, would achieve FCOG targets. Project consistency with the 2018 RTP/SCS would therefore support AB 32 and SB 32 GHG reduction goals.

Senate Bill 32

In 2016, the governor signed SB 32 into law, extending AB 32 by requiring the state to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). In 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies, such as SB 350 and SB 1383 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (regional, sub-regional, county, or city level), but not for specific individual projects because they include all emissions sectors in the state.

Senate Bill 350

Adopted in 2015, SB 350 supports the reduction of GHG emissions from the electricity sector through a number of measures, including requiring electricity providers to achieve a 50 percent renewables portfolio standard by 2030, a cumulative doubling of statewide energy efficiency savings in electricity and natural gas by retail customers by 2030.

Senate Bill 1368

SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed by the Governor in 2006. SB 1368 requires the CPUC to establish a GHG emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The CEC also was required to establish a similar standard for local publicly owned utilities in 2007. These standards cannot

exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC. The Solar Facility meets the criteria of a renewable energy generation facility as defined in Chapter 8.6 of Division 15 of the Public Resources Code and therefore is determined by rule to comply with the GHG Emission Performance Standards requirements of SB 1368.

Renewable Portfolio Standards

The State's Renewables Portfolio Standard was established in 2002 via SB 1078, which required 20 percent of the state's energy portfolio to be supplied by renewable sources such as solar, wind, hydroelectricity, geothermal, and bioenergy by 2017. Renewables Portfolio Standard goals have been accelerated over time to require the state's energy portfolio to be supplied by renewable sources in increasingly higher percentages. Since SB X1-2 was signed in 2011, the Renewables Portfolio Standard target has required all electricity retailers in the state, including investor-owned utilities, such as Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E), to procure 33 percent of their energy sales from renewable sources by the end of 2020 (CPUC 2018a). SB 350, passed in 2015, directs California utilities to further increase the amount of renewable energy to be delivered to customers to 50 percent by 2050. Collectively, PG&E, SCE, and SDG&E met the 33 percent goal in 2016 and are forecasted to reach 50 percent in 2020 (CPUC 2018b). SB 100, adopted on September 10, 2018, accelerated the state's Renewables Portfolio Standard by requiring electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. This further supports the reduction of GHG emissions from the electricity sector.

CARB Resolution 07-54

CARB Resolution 07-54 establishes 25,000 metric tons of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold was just over 0.005 percent of California's total inventory of GHG emissions for 2004.

17 California Code of Regulations Section 95350 et seq.

In 2010, CARB adopted the *Regulation For Reducing Sulfur Hexafluoride Emissions From Gas Insulated Switchgear* (Section 17 California Code of Regulations Section 95350 et seq.). The purpose of this regulation is to achieve GHG emission reductions by reducing SF_6 emissions from gas-insulated switchgear. Owners of such switchgear must not exceed maximum allowable annual emissions rates, reduced each year until 2020, after which annual emissions must not exceed 1.0 percent. Owners must regularly inventory gas-insulated switchgear equipment, measure quantities of SF_6, and maintain records of these for at least three years. Additionally, by June 1 each year, owners also must submit an annual report to CARB's Executive Officer for emissions that occurred during the previous calendar year.

In September 2020, CARB adopted Resolution 20-28, to amend the current regulation to phase out acquisition of SF_6 in gas-insulated switchgear in stages between 2025 and 2033. Under this resolution, CARB will be developing a timeline for phasing out SF_6 equipment in California and creating incentives to encourage owners to replace SF_6 equipment. The Resolution has not yet been approved by the California Office of Administrative Law.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

c. Local

San Joaquin Valley Air Pollution Control District

In August 2008, the San Joaquin Valley Air Pollution Control District's (SJVAPCD) Governing Board adopted the *Climate Change Action Plan* (SJVAPCD 2008a). The *Climate Change Action Plan* directed the SJVAPCD Air Pollution Control Officer to develop guidance to assist lead agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project-specific GHG emissions on global climate change.

In 2009, the SJVAPCD adopted the *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA* and the *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards, to assess significance of project-specific GHG emissions on global climate change during the environmental review process, as required by CEQA (SJVAPCD 2009a; 2009b).

Use of Best Performance Standards is a method of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Projects implementing Best Performance Standards would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions from business-as-usual is required to determine that a project would have a less than cumulatively significant impact and be consistent with AB 32 2020 targets. The guidance does not limit a lead agency's authority in establishing its own process and guidance for determining significance of project-related impacts on global climate change (SJVAPCD 2008b).

However, SJVAPCD's adopted Best Performance Standards are specifically directed at reducing GHG emissions from stationary sources that require a permit from the District; therefore, the adopted Best Performance Standards would not generally be applicable to the Project because the Project would not be a stationary source of emissions.

Fresno Council of Governments

As discussed above, the FCOG developed the 2018 RTP/SCS as the region's strategy to fulfill the requirements of SB 375. The 2018 RTP/SCS establishes a development pattern for the region that, when integrated with the transportation network and other policies and measures, would reduce GHG emissions from transportation (excluding goods movement). Specifically, the 2018 RTP/SCS links the goals of sustaining mobility with the goals of fostering economic development; enhancing the environment; reducing energy consumption; promoting transportation-friendly development patterns; and encouraging all residents affected by socioeconomic, geographic, and commercial limitations to be provided with fair access. The 2018 RTP/SCS does not require local general plans, specific plans, or zoning be consistent with it, but provides incentives for consistency for governments and developers.

4.8.2 Impact Analysis

4.8.2.1 Methodology and Significance Thresholds

a. Methodology

The majority of individual projects do not generate sufficient GHG emissions to influence climate change directly. However, physical changes caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be 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, other current projects, and probable future projects (CEQA Guidelines Section 15064[h][1]).

For future projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, consistency with a regional GHG reduction plan, or consistency with statewide regulations adopted to reduce GHG emissions. A project may be found to have a less-than-significant impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (14 Cal. Code Regs. Section 15064[h][3]). According to the CEQA Guidelines, projects can tier off of a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in that plan. The Association of Environmental Professionals considers this approach in its white paper, "Beyond Newhall and 2020," to be the most defensible approach presently available under CEQA to determine the significance of a project's GHG emissions (Association of Environmental Professionals 2016). However, the SJVAPCD's current GHG reduction strategy presented in the 2008 *Climate Change Action Plan* only aligns with the AB 32 2020 emissions target and does not address the SB 32 2030 emissions target. Because the GHG reduction plan does not specifically address the 2030 target and the project would become operational post-2020, tiering from the regional 2008 *Climate Change Action Plan* is not applicable.

Instead, the potential for the Project to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHG was assessed by examining the Project's consistency with the GHG reduction measures detailed in CARB's 2017 Climate Change Scoping Plan. Under the SJVAPCD's CEQA guidance for GHG, a project would not have a significant GHG impact if it is consistent with an applicable plan to reduce GHG emissions, and a CEQA compliant analysis was completed for the GHG reduction plan (SJVAPCD 2009a). Project GHG emissions are quantified for informational purposes.

Construction and Operational Emissions

Construction of the Solar Facility would generate temporary GHG emissions primarily from the use of construction equipment on site, from vehicles transporting construction workers to and from the Project site, from heavy trucks used to export earth materials off site, and from trucks delivering equipment and materials for the Solar Facility. Site preparation and grading typically generate the greatest amount of emissions from grading equipment and soil hauling. Operational activities of the Solar Facility would generate GHG emissions primarily from operation of maintenance equipment on site and vehicles transporting employees to and from the Project site. Emissions associated with decommissioning the Project were estimated based on equipment generally required to remove the Solar Facility's equipment given the facility's size. The analysis relied on CARB's on-road vehicle

emission factor model EMFAC2014, CARB's 2017 Off-Road Equipment Inventory Model OFFROAD2017, and emission factors obtained from the USEPA AP-42 *Compilation of Air Pollutant Emissions Factors* (as amended). The EMFAC2014 model develops CO_2 and CH_4 emission estimates. The California Climate Action Registry (January 2016) was used for on-road emissions of CH_4 and N_2O. These emissions results were used to calculate carbon dioxide equivalent (CO_2e). Short-term and annual Solar Facility emissions were estimated using appropriate emission factors, provided equipment lists, the construction phasing schedule, and average daily operational activities. While up to 40 employees may be required on site during scheduled operation and maintenance activities, only eight full-time employees would actually commute daily. To provide a conservative estimate, off-site emissions were based on the maximum number of employees that would be traveling to the site in a single day to perform maintenance activities (i.e., 48 employees). Refer to Section 2, *Project Description*, and Appendix D for details on equipment fleet, hours of operation, vehicle miles traveled, and other assumptions used in this analysis.

SJVAPCD requires the use of CalEEMod (California Emission Estimator Model) to determine compliance with the Indirect Source Rule (Rule 9510); however, that model is designed to provide emissions quantification for typical residential and commercial land uses and is not appropriate for evaluating large-scale solar power development. The methodology for this analysis uses the same emissions factors as those contained in the latest version of CalEEMod (ver 2016.3.2).

The two proposed substations for the site may feature circuit breakers that contain SF_6 gas, used as an insulator and an arc suppressor in the breakers. SF_6 is inert and non-toxic, and is encapsulated in the breaker assembly. SF_6 is a GHG with substantial global warming potential because of its chemical nature and long residency time within the atmosphere. However, under normal conditions, it would be completely contained in the equipment and SF_6 would only be released in the unlikely event of a failure, leak, or crack in the circuit breaker housing. New circuit breaker designs have been developed over the past several years to minimize the potential for leakage, compared to that of past designs.

PG&E Improvements

In addition to construction of the Solar Facility, the PG&E Improvements and a new transmission line would be constructed. The switching station would be operated remotely and any routine maintenance activities would occur in accord with PG&E's maintenance program in the area; therefore, only emissions from construction and decommissioning activities were estimated in association with the PG&E Improvements. Construction of the PG&E Improvements may occur during Phase 1 of construction of the Solar Facility and would take approximately nine months to complete with a maximum of 23 construction workers. Decommissioning activities would occur concurrently with decommissioning of the Solar Facility and would take an estimated 40 days to complete with a maximum of 23 construction workers. Short-term emissions during construction and decommissioning activities for the PG&E Improvements were estimated using provided equipment lists, construction schedule, and estimated trip generation for material deliveries and worker commutes.

Indirect GHG Emissions Associated with Water Use

The use of water in California can involve substantial energy consumption, depending on the source of the water and the use location relative to the source. Major portions of the state rely on imported water from the State Water Project (California Aqueduct), the Central Valley Project, the Colorado River Aqueduct, the All-American Canal, and similar large-scale water distribution systems.

Moving water across the state involves considerable energy consumption for pumping and delivering the water to the use location. The use of groundwater can involve substantial energy consumption to pump water from deep aquifers. In addition to the energy consumption associated with wholesale water supply, energy is consumed during local treatment for potable use and for local delivery. Most of the energy associated with water supply is provided by electricity, which is generated from a variety of sources, including fossil-fueled power plants that produce GHGs. Consequentially, the use of water for dust control and grading compaction during construction and decommissioning and photovoltaic panel washing during operations results in indirect GHG emissions.

The Solar Facility is anticipated to acquire water from an existing private well on the Great Valley Solar Facility site and/or to purchase from the Westlands Water District. Based on the energy factors in CPUC's *Embedded Energy in Water Studies* (CPUC 2010) and assuming minimal treatment and delivery, it was estimated that each acre-foot of water requires 650 kilowatt-hours of electricity for Project site delivery. The amount of GHG emissions associated with the 650 kilowatt-hours was based on the emissions profile for PG&E provided in CalEEMod (California Air Pollution Control Officers Association 2017).

Displaced Emissions

The operation of the Solar Facility would create renewable energy over the planned 45-year operational period. This energy would displace GHG emissions that would otherwise be produced by existing power generation resources, including coal and natural gas/other non-renewables. The Solar Facility has the capacity to generate approximately 400 MW of electricity at peak sun exposure. Annual energy generation was estimated based on solar radiation at the project site and annual operational time[3].Refer to Section 4.6, *Energy Conservation*, and Appendix G for detailed calculations related to the Solar Facility's annual energy generation. The Solar Facility is assumed to displace a fraction of existing current annual power generated (CEC 2019). Displaced GHG emissions were estimated assuming that generated solar energy would displace energy generated from fossil fuels in the California market and does not include the approximately 30 percent of the California electricity generated by non-combustion sources (CEC 2019).

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would result in a significant impact if it would:

a. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

[3] Photovoltaic cell capacity is rated in terms of mega or kilowatts and indicates the amount of instantaneous power produced when operating at peak sun exposure. Total amount of electricity produced in measured in watt-hours and is dependent on operational time. Operational time of a solar panel is defined by the amount of time that the photovoltaic cells are actively converting solar energy into power, which depends on solar radiation. Solar radiation is the measure of energy emitted from the sun and varies daily depending on the time of day, season, local landscape, and geography.

4.8.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the Project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
Threshold b:	Whether the Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs

IMPACT GHG-1 CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF THE PROJECT WOULD DIRECTLY AND INDIRECTLY GENERATE GHG EMISSIONS. HOWEVER, SUCH EMISSIONS WOULD BE OFFSET BY THE LONG-TERM GENERATION OF RENEWABLE ENERGY AND THE PROJECT WOULD BE CONSISTENT WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS ADOPTED FOR THE PURPOSE OF REDUCING GHG EMISSIONS. THE IMPACT WOULD BE LESS THAN SIGNIFICANT AND BENEFICIAL.

Solar Facility

GHG Emissions

The Solar Facility would generate GHG emissions directly and indirectly during construction, routine operational and maintenance activities, and decommissioning activities. The majority of emissions from the Solar Facility would be generated during construction and decommissioning activities. Table 4.8-2 presents total estimated emissions from construction and decommissioning activities from on-site and off-site emission sources. The estimated total GHG emissions during Solar Facility construction would be approximately 13,384 MT CO_2e over the 18-month construction period. GHG emissions during decommissioning would be approximately 5,705 MT CO_2e over the 2-year decommissioning period. Estimated construction and decommissioning emissions related to the Solar Facility amortized over 35 years, the anticipated Project lifetime, would be approximately 545 MT CO_2e per year. Additional details on calculations can be found in Appendix D.

Table 4.8-2 Estimated GHG Emissions from Solar Facility Construction and Decommissioning

Phase	Source	GHG Emissions (MT CO_2e)
Construction		
	Construction Equipment and On-site Mobile	7,713
	On Road Vehicles	5,603
	Water Consumption	68
Subtotal		13,384
Decommissioning		
	Construction Equipment and On-site Mobile	4,626
	On Road Vehicles	1,079
Subtotal		5,705
Total		**19,089**
Annualized 35-year		545

Note: Numbers have been rounded to nearest metric ton.

Table 4.8-3 summarizes operational emissions associated with the Solar Facility. Operation and maintenance of the Solar Facility would generate GHG emissions largely through motor vehicle trips to and from the Project site, on-site maintenance activities involving portable equipment and maintenance vehicles, and energy use associated with water consumption. The Solar Facility is estimated to emit 1,191 MT CO_2e per year. Off-site emissions from worker commutes account for approximately 71 percent of operational emissions. The SJVAPCD recommends that construction emissions be amortized over a project's lifetime, so that GHG reduction measures would address construction and decommissioning GHG emissions as part of the operational GHG reduction strategies. Thus, the total construction and decommissioning GHG emissions, amortized over 35 years, was added to the annual estimated operational emissions to estimate annual GHG emissions generated by the Solar Facility.

Overall, the Solar Facility would emit 646 MT CO_2e annually. However, renewable energy offsets GHG emissions generated by fossil-fuel power plants to the extent that renewable energy serves demand otherwise served with a fossil-fuel powered source. As discussed in Section 4.6, *Energy*, the Solar Facility would generate approximately 806 GWh of electricity each year. This additional solar-generated energy would be added to the power grid and be used in place of electricity generated by fossil-fuel sources. The Solar Facility has the potential to displace 173,445 MT CO_2e annually over its 35-year lifespan, which would result in an overall lifetime reduction of approximately 6,070,568 MT CO_2e. The emissions generated during construction, decommissioning, and 35 years of operation, approximately 41,702 MT CO_2e, would be offset fully by GHG emission reduction within the first year of the Solar Facility's operation. Therefore, the impact would be beneficial.

Table 4.8-3 Estimated Annual GHG Emissions from Solar Facility

Phase	Source	GHG Emissions (MT CO_2e)
Decommissioning and Construction		
	Annualized 35 year	545
Operation		
	Maintenance Equipment and On-site Mobile	186
	On Road Vehicles	456
	Water Consumption	4
Subtotal		646
Total		**1,191**
Annual Displaced GHG emissions (MT/year)		173,445
Numbers have been rounded to nearest metric ton		

The use of SF_6 in electric utility systems and switchgear, including circuit breakers, poses a concern, because this pollutant has an extremely high global warming potential (one pound of SF_6 is the equivalent warming potential of approximately 23,900 pounds of CO_2). The proposed substations would have circuit breakers that contain SF_6. However, new circuit breaker designs have been developed over the past several years to minimize the potential for leakage, compared to that of past designs (CARB 2018d). In addition, the equipment would comply with CARB's *Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear* regulations. CARB's current regulations require that switchgear not exceed a maximum allowable annual SF_6 emissions rate of 1.0 percent. All circuit breakers used for this project would have a manufacturer-guaranteed SF_6 leakage rate of 0.5% per year or less per International Electro-technical Commission (IEC) standards. The only equipment within the substations that would have SF_6 gas would be the five 230 kilovolt (kV) circuit

breakers. Each breaker would contain 185 pounds (lbs) of SF_6, for a total of 925 lbs of SF_6 gas. Assuming that SF_6 leakage would not exceed 0.5 percent annually, total annual SF_6 leakage would be up to 4.6 lbs (0.002 MT). Based on the global warming potential of SF_6, the circuit breakers would result in up to 50 MT of CO_2e emissions, annually.[4] In compliance with CARB regulations, the Applicant would be required to regularly inventory gas-insulated switchgear equipment, measure quantities of SF_6 and submit an annual report to CARB. With compliance with existing CARB regulations, the amount of SF_6 that could be released by the Solar Facility equipment would be minimal.

Plan Consistency

Under the SJVAPCD's CEQA thresholds for GHG emissions, a project would not have a significant impact if it is consistent with an applicable plan to reduce GHG emissions, and a CEQA compliant analysis was completed for the GHG reduction plan. As previously stated under *Regulatory Setting,* the 2008 *Climate Change Action Plan* directed the SJVAPCD Air Pollution Control Officer to develop guidance and thresholds to assess project-specific GHG emissions on global climate change. The SJVAPCD considers projects implementing Best Performance Standards (BPS) or demonstrating a 29 percent reduction in GHG emissions to be consistent with AB 32 2020 targets. Although SJVAPCD's adopted BPS is not applicable to the Solar Facility because it is not a stationary source of emissions and the Project would become operational after 2020, the Solar Facility would be considered consistent with GHG reduction goals and policies adopted by the 2008 *Climate Change Action Plan*, AB 32, SB 32, and SB 100. The Project would produce a new renewable source of energy and therefore displace GHG emissions from energy production in Fresno County.

The Solar Facility would also be consistent with the renewable energy goals under the 2017 Scoping Plan Update and SB 100.The Solar Facility is consistent with the following specific electricity goals outlined in the 2017 Scoping Plan Update:

- Per SB 350, increase the Renewable Portfolio Standard to 50 percent of retail sales by 2030 and ensure grid reliability.
- Continue to increase use of distributed renewable generation at state facilities where space allows.
- Continue GHG reductions through participation in the California Independent System Operator (CAISO) Energy Imbalance Market.
- Per SB 350, efforts to evaluate, develop, and deploy regionalization of the grid and integration of renewables via regionalization of the CAISO should continue while maintaining the accounting accuracy and rigor of California's GHG policies.

SB 100 accelerated the state's RPS Program by increasing California's procurement of electricity from renewable sources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. The Solar Facility would generate approximately 806 GWh of electricity each year or approximately 32,240 GWh over the Solar Facility's lifetime. This additional solar-generated energy would be added to the power grid and be used in place of electricity generated by fossil-fuel sources, and thus would directly support energy goals under SB 100 and the 2017 Scoping Plan Update. Replacement of fossil-fuel sources with renewable solar energy would also displace GHG emissions, ultimately offsetting any GHG emissions produced by construction, decommissioning, and operation of the Solar Facility. Therefore, the Solar Facility would be consistent with state and

[4] A global warming potential of 23,900 was used to convert emissions to CO_2e. This value is based on the global warming potential in the USEPA Mandatory Reporting Program Regulations (40 C.F.R. Part 98, Subpart A)

regional plans to reduce GHG emissions. The Solar Facility's impact to GHG emissions would be beneficial.

The FCOG's RTP/SCS would also be considered an applicable plan adopted for the purpose of reducing GHGs from the land use and transportation sectors in Fresno County and was adopted after completion of a Program EIR, and approved by CARB in 2018 (FCOG 2018). Thus, a project could result in a significant impact due to a conflict with an applicable plan, policy, or regulation if it would be inconsistent with the adopted FCOG RTP/SCS. The GHG emission goals in the FCOG RTP/SCS are based on demographic data trends and projections that include household, employment, and total population statistics. Since the Solar Facility does not propose housing and would not result in a population increase, only the Solar Facility's contribution to employment needs to be considered.

The FCOG RTP/SCS estimates the total employment in Fresno County will be 398,050 in 2020 and 422,000 in 2025, or 4,790 additional jobs per year in that timeframe (FCOG 2018). The Solar Facility construction and decommissioning workforce employment would be temporary, lasting 18 months for construction and 24 months for decommissioning, and is expected to come from the existing construction labor pool in Fresno County. The Solar Facility is anticipated to have up to eight full-time equivalent personnel consisting of plant operators and maintenance technicians starting in 2021. Therefore, the additional jobs projected for the Solar Facility would be well within the annual growth projection for the FCOG 2018 RTP/SCS. The Solar Facility would be consistent with the FCOG 2018 RTP/SCS, and impacts would be less than significant.

PG&E Improvements

GHG emissions resulting from the PG&E Improvements would be largely due to construction and decommissioning activities. Once operational, the PG&E Improvements would have negligible GHG emissions as it is operated remotely. In addition, the PG&E Improvements will not include equipment that would contain SF_6 gas. Table 4.8-4 presents estimated GHG emissions from construction and decommissioning activities of the PG&E Improvements from on-site and off-site emission sources, as well as the emissions annualized over an estimated 35-year lifetime.

Table 4.8-4 Estimated GHG Emissions from PG&E Improvements

Phase	Source	GHG Emissions (MT CO_2e)
Construction		
	Construction Equipment and On-site Mobile	51
	On Road Vehicles	500
Subtotal		551
Decommissioning		
	Construction Equipment and On-site Mobile	20
	On Road Vehicles	31
Subtotal		51
Total		**602**
Annualized 35-year		17

Note: Numbers have been rounded to nearest metric ton.

Total emissions from construction and decommissioning of the PG&E Improvements would be approximately 602 MT CO_2e, which would contribute approximately 17 MT CO_2e annually given the Project's 35-year lifespan. This would be fully offset by GHG emission reduction within the first year of the Solar Facility's operation.

Combining GHG emissions from the construction and operation of the PG&E Improvements with emissions generated by construction, operation, and decommissioning of the Solar Facility would result in approximately 42,303 MT CO_2e over the lifetime of the Project. This would be offset by the Solar Facility's overall reduction of CO_2e due to the renewable source of energy, compared to use of fossil fuels for energy production. As discussed above, the Solar Facility has the potential to displace 173,445 MT CO_2e annually over its 35-year lifespan, which would result in an overall lifetime reduction of approximately 6,070,568 MT CO_2e. As such, the combined PG&E Improvements and Solar Facility emissions (42,303 MT CO_2e) would be offset fully by GHG emission reduction within the first year of the Solar Facility's operation. The PG&E Improvements combined with the Solar Facility would not result in combined significant effects from GHG emissions and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.8.2.3 Cumulative Impacts

GHG emissions are inherently a cumulative concern, in that the significance of GHG emissions is determined by whether such emissions would have a cumulatively considerable impact on global climate change. Although the geographic scope of cumulative impacts related to GHG emissions is global, this analysis focuses on the state, the region, and this Project's direct and/or indirect generation or offset of GHG emissions. California Air Pollution Control Officers Association considers GHG impacts to be exclusively cumulative impacts, in that no single project could result in a substantial change in climate by itself (California Air Pollution Control Officers Association 2008). Therefore, the evaluation of cumulative GHG impacts presented above evaluated whether the Project would make a considerable contribution to cumulative climate change effects. Overall, the Project would decrease GHG emissions by offsetting production of electricity from nonrenewable sources and would result in a net reduction of approximately 173,445 MT CO_2e per year and approximately 6,070,568 MT CO_2e over the Project's 35-year lifetime (Appendix D). The Project would reduce the local, regional, and statewide cumulative GHG emissions and offset a portion of the incremental cumulative GHG impacts of other projects. Therefore, the Project would support attainment of the state's GHG reduction goals and the Project-specific incremental impact on GHG emissions would not be cumulatively considerable.

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4.9 Hazards and Hazardous Materials

This section identifies and evaluates issues related to hazards and hazardous materials in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, and the results of the impact analysis. The analysis presented in this section is based in part on the information contained in the following Project-specific reports:

- Phase I Environmental Site Assessment (ESA) for the Solar Facility portion of the Project site (Stantec Consulting Services, Inc. [Stantec] 2016a) contained in Appendix J1
- Phase II ESA for the Solar Facility portion of the Project site (Stantec 2016b) contained in Appendix J2
- Phase I ESA for the PG&E Improvements portion of the Project site (Stantec 2014a) contained in Appendix J3
- Phase II ESA for the PG&E Improvements portion of the Project site (Stantec 2014b) contained in Appendix J4

4.9.1 Setting

4.9.1.1 Environmental Setting

The Project site is in a rural, agricultural portion of Fresno County in the western San Joaquin Valley. Hazardous waste handlers and generators in Fresno County include industries, businesses, public and private institutions, and households. Agricultural land use can involve the storage and application of pesticides and the storage and use of fuel. Gasoline stations and other facilities that utilize or store solvents, chemicals, or other hazardous materials are other potential sources of hazardous materials in rural areas. These sources of hazardous materials, if encountered, can cause exposures that may result in adverse environmental and health effects.

a. Definition of Hazardous Materials

A hazardous material is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (Health and Safety Code Section 25501[o]). The term “hazardous materials” refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases).

In some cases, past industrial or commercial activities on a site generated spills or leaks of hazardous materials to the ground, resulting in soil and/or groundwater contamination. If improperly handled, this contamination can threaten public health if released from the soil, groundwater, or into the air. Inhalation, ingestion, bodily contact, and injection are the four primary exposure pathways through which an individual can be exposed to a hazardous material. Exposure can come as a result of an accidental release of hazardous materials during transport, storage, or handling. Disturbance of contaminated subsurface soil during construction also can cause exposures to workers, the public, or the environment through stockpiling, handling, or transport of soils.

b. Soil and Groundwater Contamination

In California, regulatory databases listing hazardous materials sites provided by numerous federal, state, and local agencies were consolidated originally in the "Cortese List," pursuant to Government Code Section 65962.5, effective in 1992. However, subsequent changes in web-based information availability since that time have made a consolidation of this list no longer necessary; the databases are maintained on an individual basis by the following responsible agencies:

- List of Hazardous Waste and Substances sites from California Department of Toxic Substances Control (DTSC) EnviroStor database;
- List of Leaking Underground Storage Tank Sites by County and Fiscal Year from the California State Water Resources Control Board (SWRCB) GeoTracker database;
- List of solid waste disposal sites identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit;
- List of "active" Cease and Desist Order and Cleanup and Abatement Order from the SWRCB; and
- List of hazardous waste facilities subject to corrective action pursuant to Health and Safety Code Section 25187.5, as identified by DTSC and listed on its EnviroStor database.

The five databases above identify sites with suspected and confirmed releases of hazardous materials to the subsurface soil and/or groundwater. The SWRCB GeoTracker database includes leaking underground storage tanks, permitted underground storage tanks, and Department of Defense Sites Cleanup Program sites. The DTSC EnviroStor database includes federal and state response sites; voluntary, school, and military cleanups and corrective actions; and permitted sites. The reporting and statuses of these sites change as identification, monitoring, and clean-up of hazardous materials sites progress. Typically, a listed site is considered no longer of concern once it has been demonstrated that existing site uses, combined with the levels of identified contamination, present no significant risk to human health or the environment.

According to a review of the GeoTracker database, the Project site is not included as a leaking underground storage tank, Department of Defense, or Cleanup Program site. One site, the Gray Property, is listed on the Cleanup Program Site database within 1.0 mile of the Project site (SWRCB 2020). The Gray Property case, located at the intersection of Floral Avenue and San Mateo Avenue, was completed and closed more than 50 years ago (SWRCB 2020). The EnviroStor database identified no additional sites on or within 1.0 mile of the Project site (DTSC 2020).

According to the California Department of Conservation's Geologic Energy Management Division (CalGEM), the Project site is not located in a known oil production field, but the Project site contains three plugged and abandoned oil/gas wells (CalGEM 2020).

c. Phase I Investigations

Phase I ESAs were conducted for the Solar Facility area[1] in April 2016 and for the PG&E Improvements area in December 2014, to document any Recognized Environmental Conditions (REC; Stantec 2014a, 2016a). A REC is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. The Phase I ESA conducted for the Solar

[1] With the exception of APN 028-11-112. However, this parcel is entirely surrounded by parcels included in the Phase I ESA, and the records search radius encompassed this parcel.

Facility area discovered soil staining near the on-site agricultural wells and pumps, fuel aboveground storage tanks (ASTs), turbine oil ASTs, diesel powered agricultural engines, and engine oil ASTs. The Phase I ESA concluded the observed soil staining is considered a REC on the Project site and recommended a Phase II subsurface investigation to determine the concentration of the petroleum hydrocarbons in the on-site soil. The Phase I ESA for the PG&E Improvements area revealed no evidence of RECs on or in connection with the PG&E Improvement area (Stantec 2014a).

d. Phase II Investigations

To determine whether the historical agricultural use involved the application of pesticides or heavy metal-containing herbicides, Phase II subsurface investigations were completed to sample and analyze soil on the Solar Facility area and PG&E Improvements area to determine whether pesticides, arsenic, or lead are present at levels exceeding regulatory thresholds. Six soils samples were collected in the immediate vicinity of the PG&E Improvements area on July 1, 2014 and 88 additional shallow soil samples were collected across the Solar Facility area on March 22, 2016 (Stantec 2014b, 2016b). The results of the chemical analyses showed pesticides and lead at levels well below applicable regulatory thresholds and arsenic at levels well within naturally-occurring regional background levels. Therefore, the historical agricultural use of the Project site was found not to represent a REC, and no further investigation regarding this issue was recommended.

No Phase II subsurface investigation has been conducted to determine the concentration of petroleum hydrocarbons in areas where on-site soil staining occurs.

e. Crystalline and Amorphous Silicon Modules

Crystalline and amorphous silicon (c-Si) is a semiconductor used in solar cells to convert solar energy into electricity. Crystalline silicon PV panels may include small amounts of solid materials considered to be hazardous. A silicon PV module is composed of silicon solar cells, metal contacts between the cells, an encapsulation layer that encloses the cells, a front glass plate, and a back-side foil or a second glass plate on the back side. Often the module is framed with aluminum and contains a contact box. The solar cells themselves represent only about 4% of the mass of a finished module and are in a solid and non-leachable state and do not endanger public health (NC Clean Energy Technology Center 2017).

f. Wildland Fire

The California Department of Forestry and Fire Prevention (CAL FIRE) requires counties to develop fire protection management plans that address potential threats of wildland fires. The Fresno-Kings Unit Strategic Fire Plan governs fire protection activities for 955,167 State Responsibility Area acres and 1,626,782 Local Responsibility Area acres with a Cooperative Fire Protection Agreement with the Fresno County Fire Protection District (FCFPD) and CAL FIRE (CAL FIRE and FCFPD 2017). The Project site is sparsely vegetated and not within an area identified by CAL FIRE as a very high fire hazard severity zone[2] (CAL FIRE 2007).

g. San Joaquin Valley Fever

With more than 20 cases per year of San Joaquin Valley Fever per 100,000 people, Fresno County is considered “highly endemic” (California Department of Industrial Relations 2017). San Joaquin Valley

[2] The designations of “very high fire hazard severity zone” is based on consistent application of state-wide criteria, including “fuel loading, slope, fire weather, and other relevant factors including areas where Santa Ana, Mono, and Diablo winds have been identified by [CAL FIRE] as a major cause of wildfire spread” (Government Code Section 51178).

Fever is an infectious disease caused by the fungus *Coccidioides immitis*. San Joaquin Valley Fever is also known as Valley Fever, Desert Fever, Coccidioidomycosis, or Cocci. In susceptible people and animals, infection occurs when a *Coccidioides immitis* spore is inhaled. Fungal spores become airborne when soil is disturbed by natural processes such as wind or earthquakes, or by human-induced ground-disturbing activities such as construction and farming.

The Centers for Disease Control and Prevention reports farm workers, construction workers, others who engage in soil-disturbing activities, and anyone spending time outdoors in western Fresno County are at risk for Valley Fever (Centers for Disease Control and Prevention 2019). High winds can carry dust containing the spores long distances. Most people infected with Valley Fever have no symptoms. If symptoms develop, they usually occur in the lung and initially resemble the flu or pneumonia (e.g., fatigue, cough, shortness of breath, chest pain, fever, rash, headache, and joint aches). Despite prioritization of Valley Fever research by the National Institutes of Health and the Centers for Disease Control and Prevention, including millions of dollars in grant funding for valley fever research, no vaccine to protect humans from Valley Fever currently exists. Valley Fever is not contagious, and secondary infections are rare. A 2012 study found that an average of less than 200 deaths per year in the U.S. were attributable to Valley Fever between 1990 to 2008, and that the number of Valley Fever-associated deaths each year has been fairly stable since 1997 (Huang et al. 2012).

The number of cases can depend on environmental factors, with wet winters followed by arid summers causing an increase in the incidence of infection (Johnson et al. 2014). The number of cases of Valley Fever in Fresno County has varied over the past several years. Between 2011 and 2014, the total number of cases decreased from 724 to 156. In 2016, the number of total number of cases spiked to 601, from 267 cases reported the previous year in 2015. Those most at risk of developing severe symptoms include Hispanics, African Americans, Filipinos, pregnant women, the elderly, and people with weakened immune systems (California Department of Public Health 2017).

h. Naturally-Occurring Asbestos

Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. When rock that contains asbestos is broken or crushed, asbestos fibers may be released and become airborne. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that scars the lungs). Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present. According to mapping of ultramafic rocks in California, there are isolated areas within the County where ultramafic rocks are found, but the Project site is located well outside of any known ultramafic rock outcrops (California Department of Mines and Geology 2000).

4.9.1.2 Regulatory Setting

a. Federal

Hazardous Materials Management

The primary federal agencies with responsibility for hazardous materials management include the U.S. Environmental Protection Agency, U.S. Department of Labor Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation. State and local agencies often

have either parallel or more stringent regulations than these federal agencies. In most cases, state law mirrors or overlaps federal law and enforcement of these laws is the responsibility of the state or local agency to which enforcement powers are delegated.

Hazardous Materials Transportation

The U.S. Department of Transportation regulates hazardous materials transportation on all interstate roads pursuant to its authority under the Hazardous Materials Transportation Uniform Safety Act (49 United States Code Section 5101 et seq.). The purpose of the Act is to "protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce." In California, the California Highway Patrol and California Department of Transportation are the state agencies with primary responsibility for enforcing federal and state regulations and for responding to transportation emergencies. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications.

Clean Air Act

Regulations under the Clean Air Act are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store minimum quantities (called threshold quantities) or greater of listed regulated substances to develop a Risk Management Plan including hazard assessments and response programs to prevent accidental releases of listed chemicals.

National Emissions Standards for Hazardous Air Pollutants

Air toxics regulations under the Clean Air Act specify work practices for asbestos to be followed during demolitions and renovations of all facilities, including, but not limited to, structures, installations, and buildings (excluding residential buildings that have four or fewer dwelling units). The regulations, found in the Code of Federal Regulations (CFR) under 40 CFR 61 Subpart M, require a thorough inspection where the demolition or renovation operation will occur. Performing the work in accordance with the national emissions standard for asbestos helps to ensure areas in use during the renovation are not contaminated and the area under renovation is free of contamination, when the renovation is complete.

Toxic Substances Control Act and Resource Conservation and Recovery Act

The Federal Toxic Substances Control Act of 1976 and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the U.S. Environmental Protection Agency for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Amendments, which affirmed and extended the "cradle to grave" system of regulating hazardous materials and wastes.

Occupational Safety

OSHA is the agency responsible for assuring worker safety in the handling and use of chemicals in the workplace. The federal regulations pertaining to worker safety are contained in Title 29 of the CFR, as authorized in the Occupational Safety and Health Act of 1970. They provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. At sites known or suspected to have soil or groundwater contamination, construction workers must receive training in hazardous materials operations and a site health and safety plan must be

prepared. The health and safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

North American Electric Reliability Corporation Standards

The North American Electric Reliability Corporation Standards (NERC) is a nonprofit corporation comprising 10 regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, the NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC 2020). In order to improve the reliability of regional electric transmission systems and in response to the massive widespread power outage that occurred on the Eastern Seaboard, NERC developed a transmission vegetation management program that is applicable to all transmission lines operated at 200 kv and above to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electric system in the region.

The plan became effective on April 1, 2005 and was updated most recently in February 15, 2018; it establishes requirements of the formal transmission vegetation management program, which include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, while considering transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain and elevation, and the effects of wind velocities on conductor sway. The clearances identified must be no less than those set forth in the Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard 516-2009 (*Guide for Maintenance Methods on Energized Power Lines*) (IEEE 2009), which establishes minimum vegetation-to-conductor clearances to maintain electrical integrity of the electrical system.

b. State

In January 1996, the California Environmental Protection Agency adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program, Health & Safety Code Section 25404 et seq.). The program has six elements: hazardous waste generators and hazardous waste on-site treatment; underground storage tanks; aboveground storage tanks; hazardous materials release response plans and inventories; risk management and prevention programs; and Unified Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level. The Certified Unified Program Agency (CUPA) is the local agency that is responsible for the implementation of the Unified Program. In Fresno County, the Fresno County Division of Environmental Health is the designated CUPA for all businesses (Fresno County 2018a).

Hazardous Materials Management

The California Hazardous Materials Release Response Plans and Inventory law (Business Plan Act, Health and Safety Code Section 25500 et seq.) requires any business that handles hazardous materials at or above the following specified thresholds to prepare a Hazardous Materials Business Plan (HMBP):

- 55 gallons for liquids;
- 500 pounds for solids; and/or
- 200 cubic feet (at standard temperature and pressure) for compressed gases.

The primary purpose of the HMBP requirement is to provide basic information needed by first responders to prevent or mitigate damage to the public health and safety and to the environment from a release or threatened release of a hazardous material (California Office of Emergency Services 2014). HMBP requirements could apply, for example, to the handling of mineral oil, a highly refined hydrocarbon-based oil used as an insulation medium and coolant in transformers and other electrical equipment.

Hazardous Waste Handling

DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. Federal and state laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. Laws and regulations require hazardous materials users to store these materials appropriately and to train employees to manage them safely.

Individual states may implement their own hazardous waste programs in lieu of RCRA, as long as the state program is at least as stringent as federal RCRA requirements. In California, the DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed in landfills. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the California Hazardous Waste Control Law (Health and Safety Code Section 25100 et seq.) and its implementing regulations, 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 DTSC.

Occupational Safety

The California Department of Industrial Relations Division of Occupational Safety and Health (Cal/OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations in California. Because California has a federally approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in Title 29 of the CFR.

Cal/OSHA regulations concerning the use of hazardous materials in the workplace require employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations, which contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. The hazard communication program also requires that material safety data sheets be available to employees, and that employee information and training programs be documented. These regulations also require preparation of emergency action plans (escape and evacuation procedures, rescue and medical duties, alarm systems, and training in emergency evacuation).

Other State Regulations

The California Code of Regulations contains additional requirements that would apply to the Project, including:

1. 8 California Code of Regulations (Cal. Code Regs.) Section 2700 et seq., High Voltage Electrical Safety Orders, establish essential requirements and minimum standards for installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger.
2. 14 Cal. Code Regs. Sections 1250-1258, Fire Prevention Standards for Electric Utilities, provide specific exemptions from electric pole and tower firebreak and electric conductor clearance standards, and specifies when and where standards apply. It establishes minimum clearance requirements for flammable vegetation and materials surrounding structures.
3. 22 Cal. Code Regs. Section 66273, Standards for Universal Waste Management, regulates the management of universal wastes. These wastes are not regulated fully as hazardous waste to encourage their recycling. Batteries, electronic devices, mercury-containing equipment, lamps, cathode ray tubes and tube glass, and aerosol cans are considered universal wastes in California. A person or business who generates universal waste is required to follow the Management Requirements for Universal Waste Handlers (22 Cal. Code Regs. Sections 66273.30-66273.39), which include storage, spill protection, and disposal rules designed to minimize risk of harm to public health and the environment.

National Pollutant Discharge Elimination System Construction General Permit

The Regional Water Quality Control Board administers the stormwater permitting program in the Central Valley Region pursuant to authority delegated under the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) program. Construction activities disturbing one acre or more of land are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (Construction General Permit) and must apply for Construction General Permit coverage. Additional details of the Construction General Permit are provided in Section 4.10, *Hydrology and Water Quality*.

California Fire Code

The California Fire Code is contained in Cal. Code Regs. Title 24, Chapter 9. Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property. Section 608 of the International Fire Code was adopted by the state of California and Fresno County to minimize risk of fire from stationary battery storage systems and to contain fire in the event of such an incident. Compliance with Article 480 of the Electrical Code, which identifies insulation and venting requirements for stationary storage batteries, further reduces potential fire risk.

California Public Resources Code

The Public Resources Code (PRC) includes fire safety regulations that apply to State Responsibility Areas during fire season, the time of year designated as having hazardous fire conditions. In Fresno County, the 2018 fire season was identified as year-round (CAL FIRE 2018). During the fire hazard season, regulations restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors[3] on equipment with an internal combustion engine; specify requirements

[3]A spark arrestor is a device that prohibits exhaust gases from an internal combustion engine from passing through the impeller blades where they could cause a spark. A carbon trap commonly is used to retain carbon particles from the exhaust.

for the safe use of gasoline-powered tools in fire hazard areas; and specify fire-suppression equipment that must be provided on site for various types of work in fire-prone areas.

PRC Section 4291 provides that a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining brush- or grass-covered lands or land that is covered with flammable material shall at all times maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line.

PRC Sections 4292 and 4293 require any person who owns, controls, operates, or maintains any electrical transmission or distribution line to maintain a firebreak clearing around and adjacent to any pole, tower, and conductor that carries electric current as specified in the section.

State Responsibility Area

In designated State Responsibility Areas, the State is financially responsible for the suppression and prevention of wildfires (PRC Section 4102). Its designated State Responsibility Areas consist of more than 31 million acres, including the Fresno-Kings County Unit. The Fresno County Fire Hazard Severity Zone Map identifies the Project site and the surrounding area as an unincorporated Local Responsibility Area (CAL FIRE 2007). There are no Very High Fire Hazard Severity Zones in west-central Fresno County (CAL FIRE 2007).

c. Local

Fresno County General Plan

The Health and Safety Element of the Fresno County General Plan outlines Fresno County's planning strategies regarding emergency management and response, fire hazards, flood hazards, seismic and geological hazards, airport hazards, hazardous materials, and noise. The following list includes the policies of the Health and Safety Element relevant to hazards and hazardous materials:

- **Policy HS-B.1:** The County shall review project proposals to identify potential fire hazards and to evaluate the effectiveness of preventive measures to reduce the risk to life and property.
- **Policy HS-B.5:** The County shall require development to have adequate access for fire and emergency vehicles and equipment.
- **Policy HS-B.8:** The County shall refer development proposals in the unincorporated County to the appropriate local fire agencies for review of compliance with fire safety standards. If dual responsibility exists, both agencies shall review and comment relative to their area of responsibility. If standards are different or conflicting, the more stringent standards shall apply.
- **Policy HS-B.11:** The County shall require new development to have water systems that meet County fire flow requirements. Where minimum fire flow is not available to meet County standards, alternate fire protection measures, including sprinkler systems, shall be identified and may be incorporated into development if approved by the appropriate fire protection agency.
- **Policy HS-F.1:** The County shall require that facilities that handle hazardous materials or hazardous wastes be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.
- **Policy HS-F.3:** The County, through its Hazardous Materials Incident Response Plan, shall coordinate and cooperate with emergency response agencies to ensure adequate Countywide response to hazardous materials incidents.

- **Policy PF-H.5:** The County shall require that new development be designed to maximize safety and minimize fire hazard risks to life and property.
- **Policy PF-H.10:** The County shall ensure that all proposed developments are reviewed for compliance with fire safety standards by responsible local fire agencies per the Uniform Fire Code and other State and local ordinances

Fresno County Multi-Hazard Mitigation Plan

The Fresno County Multi-Hazard Mitigation Plan, adopted in April 2018, aims to reduce or eliminate long-term risk to people and property from hazards (Fresno County 2018b). The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 so that Fresno County would be eligible for the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance Grants. The plan was developed originally in 2007-2008 and FEMA approved in 2009. The plan was updated comprehensively in 2017-2018. Floods, wildfires, severe weather, drought, and agricultural hazards are among the hazards that can have a significant impact on the County (Fresno County 2018b). The plan identifies goals and objectives to reduce Fresno County's vulnerability to hazards, along with a number of mitigation actions specific to participating jurisdictions.

Fresno County Hazardous Materials Business Plan Program

The Fresno County HMBP Program is administered throughout the County to protect public health and the environment from risks or adverse effects associated with the improper storage and handling of hazardous materials. Businesses handling and/or storing hazardous materials exceeding the minimum thresholds established by Chapter 6.95 of the California Health and Safety Code are required to prepare and submit an HMBP to Fresno County. HMBPs must include facility information, a hazardous materials inventory (including a site map and plan), as well as emergency response and training plans (Fresno County 2020).

Fresno County Solar Facility Guidelines

Fresno County has prepared solar development guidelines designed to balance the need for renewable energy with the need to protect agricultural lands and operations (Fresno County 2017). Included in these guidelines is the requirement to prepare a Reclamation Plan for any solar facility erected in the county. Reclamation Plans must describe the handling of any hazardous chemicals/materials to be removed from the Solar Facility site upon decommissioning. A preliminary Reclamation Plan for the Project is included in Appendix B.

4.9.2 Impact Analysis

4.9.2.1 Methodology and Significance Thresholds

a. Methodology

This impact analysis focuses on potential effects associated with the Project related to hazards and hazardous materials. The analysis was based on Project-specific technical studies that assess existing conditions at the Project site, review applicable regulations and guidelines, and proposed construction, operation and maintenance, and decommissioning of the Solar Facility. The severity and significance of hazards and hazardous materials impacts are analyzed in the context of existing regulations and policies aimed at abating potential impacts to public safety and the environment

from hazards and accidental release of hazardous materials. Impacts related to the potential release of toxic air contaminants are discussed in Section 4.3, *Air Quality*.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would have a significant impact if it would:

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
b. 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;
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
d. Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
e. For a project located in an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the Project result in a safety hazard or excessive noise for people residing or working in the Project area;
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

The Initial Study in Appendix A determined the Project would not result in significance impacts to existing or proposed schools (threshold c), be located on a site included on a list compiled pursuant to Government Code Section 65962.5 (threshold d), create an airport safety hazard (threshold e), or interfere with an adopted emergency plan (threshold f). Therefore, these issues are not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for a discussion of these impacts.

4.9.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the Project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

Impact HAZ-1 THE PROJECT WOULD NOT INVOLVE THE ROUTINE TRANSPORT, USE, OR DISPOSAL OF HAZARDOUS MATERIALS. THEREFORE, THE PROJECT WOULD NOT CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The Solar Facility 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 Solar Facility would occur during the temporary construction period and would consist of liquid waste (including cleaning fluids, dust palliative, herbicides, and solvents) and some solid hazardous waste (such as welding materials and dried paint). These materials would be transported to the site during construction, and any hazardous materials produced from construction would be collected and transported away from the site. During construction, material safety data sheets for all applicable materials present at the site would be made readily available to on-site personnel. During construction of the facilities, non-hazardous construction debris would be generated and disposed of in local landfills.

Fuels and lubricants used on field equipment would be subject to the hazardous materials handling BMPs and other measures contained in the required Stormwater Pollution Prevention Plan to limit releases of hazardous materials and wastes. Further discussion of BMP requirements is provided in Section 4.10, *Hydrology and Water Quality*, of this EIR. Recyclable materials, including wood, shipping materials, and metals, would be separated when possible for recycling. Liquids and oils in the transformer and other equipment would be used in accordance with applicable regulations. The disposal of all oils, lubricants, and spent filters would be performed in accordance with all applicable regulations including the requirements of licensed receiving facilities. Overall, the relatively limited use of hazardous materials during construction would be controlled through compliance with applicable regulations and would result in less than significant impacts.

Operations and Maintenance

Operations and maintenance activities would require limited use of hazardous materials. Any hazardous materials used would be stored on site and in designated areas. The Solar Facility is not expected to produce hazardous wastes. Oil would be used as an insulating fluid in the transformers proposed to be located at the Project substations. The transformers would be filled with oil by the manufacturing company off-site and subsequently checked every four years for integrity. No chemical cleaners would be used to wash the solar modules.

During normal operation, the PV panels, batteries, and inverters are not expected to generate hazardous waste. PV modules meet rigorous performance testing standards demonstrating durability in a variety of environmental conditions. The PV modules conform to the International Electrotechnical Commission (IEC) test standards IEC 61646 and IEC61730 PV, as tested by a third-party testing laboratory certified by the IEC. In addition, the PV modules also conform to Underwriters Laboratory (UL) 1703 a standard established by the independent product safety certification organization. In accordance with UL 1703, the PV modules undergo rigorous accelerated life testing under a variety of conditions to demonstrate safe construction and monitor performance (NREL 2003).

Herbicides may be used during operation as part of weed management. The implementation of a Pest and Weed Management Plan would be undertaken as part of Project construction and operation. The Pest and Weed Management Plan would be required as a condition of approval pursuant to the Fresno County Solar Guidelines and would detail how pesticides and herbicides would be labeled, stored, and used onsite, and how records of their use would be monitored, as well as emergency information in the event of exposure. Implementation of the Pest and Weed Management Plan and compliance with relevant federal, state, and local herbicide regulations would avoid potential impacts associated with herbicide use.

The energy storage system could contain battery acids, lead acid, sodium sulfur, and sodium or nickel hydride. The storage containers are sealed such that no fluid leaks can escape from the containers. In addition, all components would have a comprehensive Spill Prevention Control and Countermeasure plan, in accordance with all applicable federal, state, and local regulations. Therefore, mandatory compliance with applicable federal, state, and County regulations would result in less than significant impacts during operation of the Project.

Decommissioning

Equipment would be repurposed off site, recycled, or disposed of in an appropriate landfill or recycling facility upon decommissioning of the Solar Facility. Refer to Section 4.14, *Utilities and Service Systems*, for a discussion of solid waste disposal and landfill capacity. Decommissioning would occur over up to 24 months and would not involve routine transport, use, or disposal of hazardous materials. Temporary use of hazardous materials and generation of hazardous waste would be similar to types/quantities used during construction, and hazard control measures also would be similar. As required by Fresno County Solar Guidelines, adoption of a Reclamation Plan would be a condition of approval for the project. The Reclamation Plan would describe the handling of any hazardous chemicals and materials to be removed from the solar facility site upon decommissioning. The plan includes measures for ensuring that hazardous chemicals are properly labeled and that the procedures listed in the materials handling data sheets are followed, as well as filling out and filing a hazardous waste report with the California Environmental Protection Agency. The plan would identify suitable locations for recycling or disposal and safety measures for handling and transporting these materials.

Decommissioning of the Solar Facility would have less than significant impacts related to the routine transport, storage, and disposal of hazardous materials.

PG&E Improvements

Similar to the Solar Facility, PG&E Improvements would not involve the routine transport, use, or disposal of hazardous materials. Fuels and lubricants used on field equipment would be subject to the hazardous materials handling BMPs in the required Stormwater Pollution Prevention Plan. Liquids and oils in the transformer and other equipment would be used in accordance with applicable regulations. Operation of the PG&E Improvements would not require hazardous materials. Therefore, the PG&E Improvements would have less than significant impacts related to the routine transport, storage, and disposal of hazardous materials.

Further, the Solar Facility in conjunction with the PG&E Improvements would not result in combined significant effects related to the routine transport, storage, and disposal of hazardous materials and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold b:	Whether the Project would 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

Impact HAZ-2 ACCIDENTAL RELEASE OF HAZARDOUS MATERIALS COULD OCCUR DURING CONSTRUCTION, OPERATION AND MAINTENANCE, AND DECOMMISSIONING OF THE PROJECT. HOWEVER, WITH ADHERENCE TO REGULATIONS AND STANDARD PROTOCOLS DURING THE STORAGE, TRANSPORTATION, AND USAGE OF HAZARDOUS MATERIALS, NO SIGNIFICANT HAZARD TO THE PUBLIC OR ENVIRONMENT WOULD OCCUR. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Construction

Potential impacts that may result from upsets or accidents during construction of the Solar Facility include the accidental release of materials, such as cleaning fluids and petroleum products, including lubricants, fuels, and solvents. Implementation of the BMPs (e.g., stabilization measures, traps, filters, etc.) required by the NPDES Construction General Permit, as well as implementation of a Project-specific HMBP as required by state laws and regulations and local requirements, would reduce impacts from these materials to less than significant levels.

Construction would also involve the installation of solar PV panels and batteries at the project site. As described in the environmental setting, hazardous materials contained in the PV panels are in a solid and nonleachable state and would not be emitted as a result of breakage. Batteries would be handled and disposed of in compliance with applicable federal, state, and County regulations would result in less than significant impacts during construction.

Operations and Maintenance

Operations and maintenance of the gen-tie lines, PV modules, and inverters would produce no hazardous waste and thus none that could be spilled or accidentally released. As described in the environmental setting, hazardous materials contained in the PV panels are in a solid and nonleachable state and would not be emitted as a result of breakage.

The hazardous materials that would be present in the energy storage system would be contained within specifications that follow applicable federal, state, and local requirements. OSHA requirements call for the inclusion of appropriate ventilation, acid resistant materials, and presence of spill protection supplies.

As discussed under Impact HAZ-1, herbicides may be used during operations as part of weed management. The implementation of a Pest and Weed Management Plan would be undertaken as part of Project construction and operation as required by Fresno County Solar Guidelines (Fresno County 2017). Implementation of the recommendations in the Pest and Weed Management Plan and compliance with relevant federal, state, and local herbicide regulations would avoid potential impacts associated with herbicide use.

The Project would not involve the routine transport, use, or disposal of hazardous materials, as defined by the Hazardous Materials Transportation Uniform Safety Act. Adherence to state laws and regulations and local standard protocols during the storage, transportation, and usage of any hazardous materials would minimize and avoid the potential for significant upset and accident condition impacts. This would include preparation and implementation of a Project-specific HMBP

for any hazardous materials exceeding the minimum thresholds established by the state under California Health and Safety Code Section 25500 et seq.

Overall, adherence to regulations and standard protocols during the storage, transportation, and usage of any hazardous materials would minimize or reduce potential impacts to less than significant levels.

Decommissioning

Solar Facility decommissioning would require the use of fuel and lubricants for construction vehicles and equipment; it would also involve transport, disposal, and recycling of hazardous materials used at the facility and in the Energy Storage System. Inadvertent releases of hazardous materials from spills or leaks could occur. Decommissioning activities would comply with existing federal, state, and County laws and regulations pertaining to the use, transport, and disposal of hazardous and nonhazardous materials. The batteries comprising the energy storage facility would be recycled or disposed in accordance with applicable regulations for the disposal of hazardous materials. There are several possible disposal and recycling locations including Recycle PV and First Solar. In addition, there are several companies located in and near Fresno that handle hazardous waste disposal (e.g. ADCO Services and T&M Hazardous Waste Management) and recycling of batteries (e.g. Waste Management, Mid-Valley Disposal, and occasional recycling events sponsored by the County and others). With compliance with existing hazardous materials, universal waste, stormwater, and utility laws and regulations, including implementation of a Project-specific HMBP for any hazardous materials exceeding the minimum thresholds established by the state, potential impacts to the public or the environment from a reasonably foreseeable upset or accident condition involving the release of hazardous materials would be less than significant.

PG&E Improvements

Construction of the PG&E Improvements would require cleaning fluids and petroleum products, including lubricants, fuels, and solvents. Implementation of the BMPs required by the NPDES Construction General Permit would reduce potential construction impacts from these materials to less than significant levels. PG&E Improvements operation would produce no hazardous waste and thus none that could be spilled or accidentally released. In addition, construction and operation of the PG&E Improvements would comply with existing federal, state, and County laws and regulations pertaining to the storage, transport, and use of hazardous and nonhazardous materials. Therefore, the PG&E Improvements involve the storage, transportation, and usage of hazardous materials would be less than significant.

Further, the Solar Facility in conjunction with the PG&E Improvements would not result in combined significant effects related to the storage, transportation, and usage of hazardous materials and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold b:	Whether the Project would 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

Impact HAZ-3 EARTHMOVING ACTIVITIES ASSOCIATED WITH CONSTRUCTION OF THE PROJECT COULD RESULT IN THE RELEASE OF *COCCIDIOIDES* SPORES INTO THE AIR, WHICH CAN CAUSE VALLEY FEVER. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Solar Facility

Construction activities that include ground disturbance can result in fugitive dust, which can cause fungus *Coccidioides* spores to become airborne if they are present in the soil. These spores can cause Valley Fever, described in Section 4.9.1.

Workers who disturb soil where fungal spores are found, whether by digging, operating earthmoving equipment, driving vehicles, or by working in dusty, wind-blown areas, are more likely to breathe in spores and become infected. Valley Fever is not a contagious disease and secondary infections are rare. Symptoms generally occur within three weeks of exposure. Most Valley Fever cases are very mild. It is estimated that 60 percent or more of infected people either have no symptoms or experience flu-like symptoms and never seek medical attention. However, in about five percent of cases, Valley Fever spreads outside the lungs to affect other body parts (e.g., joints, bones, brain, skin, or other organs) and, in extreme cases (usually among patients with compromised immune systems), can cause death. It is estimated that more than four million people live in areas where Valley Fever fungus is prevalent in the soils.

Given the endemic nature of the disease and the amount of earthmoving activities in the county relating to agricultural activities; grading and excavation for new residential, commercial, and industrial development; and surface mining operations, it is not possible to attribute a specific case of Valley Fever to a specific earthmoving activity. Ground-disturbing activities represent a continual source of spores that contribute to Valley Fever cases reported each year. Construction activities associated with the Solar Facility would result in similar localized ground disturbing activities to those that occur continually within the County.

OSHA regulates workplace safety to protect workers, including by requiring respiratory protection (29 CFR Section 1910.134). The relevant standards are provided in OSHA Publication 3079, Respiratory Protection (OSHA 2002). California, under an agreement with OSHA, operates an occupational safety and health program in accordance with Section 18 of the Occupational Safety and Health Act of 1970. The Department of Industrial Relations administers the California Occupational Safety and Health Program, commonly referred to as Cal/OSHA. Under state law, employers must "establish, implement and maintain an effective injury illness and protection plan [IIPP]" that includes "a system for ensuring that employees comply with safe and healthy work practices," "a system for communicating with employees in a form readily understandable by all affected employees on matters relating to occupational safety and health," "procedures for identifying and evaluating work place hazards," "a procedure to investigate occupational injury or occupational illness," "methods and/ or procedures for correcting unsafe or unhealthy conditions, work practices and work procedures," and "training and instruction" (8 Cal. Code Regs. Section 3203). Because Valley Fever infection occurs when a spore is inhaled, workers who disturb soil where fungal spores are found are most likely to breathe in spores and become infected. Accordingly, requirements for respiratory protection (29 CFR Section 1910.134) would be particularly applicable. California's Department of Industrial Relations can and does enforce these

laws on solar energy construction sites. Because ground disturbance in the County is ongoing and the number of cases of Valley Fever reported in the County is low each year, and because independently enforceable protections of worker safety and healthy are in place, the risk is low that fugitive dust caused by the Project would cause substantial adverse effects on human beings. However, because the potential consequences of contracting Valley Fever are high (potentially including death), this analysis conservatively concludes that Project-related fugitive dust could cause a significant impact.

PG&E Improvements

The PG&E Improvements would be located on the western portion of the Project site. Construction activities for the PG&E Improvements that include ground disturbance would result in fugitive dust, which can cause fungus *Coccidioides* spores to become airborne if they are present in the soil, as described above. Hazards discussed and impact conclusions reached above related to Valley Fever would be the same for this portion of the site. Mitigation Measures HAZ-3(a) through HAZ-3(d), regarding the preparation of a Valley Fever Management Plan, would apply to the PG&E Improvements.

Further, the Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to Valley Fever and no additional mitigation measures beyond Mitigation Measures HAZ-3(a) through HAZ-3(d) would be required.

Mitigation Measures

The following mitigation measures are applicable to the Solar Facility and the PG&E Improvements:

HAZ-3(a) Valley Fever Management Plan

The Project applicant shall consult with the County, San Joaquin Valley Air Pollution Control district, and Cal/OSHA to develop a Valley Fever Management Plan that includes specific measures to reduce the potential for exposure to Valley Fever. Prior to the issuance of grading permits, the applicant shall submit the Valley Fever Management Plan to the County for review and approval. The Valley Fever Management Plan shall include a program to evaluate the potential for exposure to Valley Fever from construction activities and to identify appropriate dust management and safety procedures that shall be implemented, as needed, to minimize personnel and public exposure to potential Valley Fever-containing dust. Measures in the Valley Fever Management Plan, which shall be implemented as applicable, may include the following:

- Provide High Efficiency Particulate Air (HEPA)-filtered air-conditioned enclosed cabs on heavy equipment. Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment.
- Provide communication methods, such as two-way radios, for use in enclosed cabs.
- Provide National Institute for Occupational Safety and Health-approved respirators for workers.
- Conduct a job hazard analysis in compliance with Cal/OSHA regulations for any worker that will be exposed to dust.
- Require half-face respirators equipped with N-100 or P-100 filters to be used during digging if determined to be warranted after conducting a job hazard analysis.
- Require employees to wear respirators when working near earthmoving machinery if determined to be warranted after conducting a job hazard analysis.

- Require employees to be medically evaluated, fit-tested, and properly trained on the use of the respirators, and implement a full respiratory protection program in accordance with the applicable Cal/OSHA Respiratory Protection Standard (8 CCR 5144).
- Provide separate, clean eating areas with handwashing facilities.
- Thoroughly clean construction tools, equipment, and vehicles with water before they are moved off-site to other work locations.
- Wheel-washing facilities with water-recycling systems shall be provided at all site egress points. Vehicles leaving the site on a daily basis shall utilize wheel-washing facilities in order to reduce dust migration off the Project site.
- On-site workers shall be required to change clothes after work every day before leaving the work site, to prevent distribution of *Coccidioides* to non-endemic areas. As an alternative, disposable Tyvek® or equivalent work suits and work boots for use on-site shall be provided for workers.
- Work with a medical professional to develop a protocol to medically evaluate employees who develop symptoms of Valley Fever. Reporting of symptoms of Valley Fever and diagnosed cases of Valley Fever must occur consistent with Cal/OSHA requirements.

HAZ-3(b) Valley Fever Dust Suppression Measures

If wind speeds exceed 15 miles per hour or temperatures exceed 95 degrees Fahrenheit for three consecutive days, additional dust suppression measures (such as additional water or the application of additional soil stabilizer) shall be implemented prior to and immediately following ground disturbing activities. The additional dust suppression shall continue until winds are 10 miles per hour or lower and outdoor air temperatures are below 90 degrees Fahrenheit for at least two consecutive days. The additional dust suppression measures shall be incorporated into the Final Construction Management Plan. The Final Construction Management Plan shall be submitted to the County for review and approval prior to the issuance of any grading permit.

HAZ-3(c) Valley Fever Worker Training Program and Safety Measures

Prior to any Project grading activity, the primary construction contractor shall prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The objective of the training shall be to ensure that workers are aware of the dangers associated with Valley Fever. The worker training program shall be included in the standard in-person training for construction workers and shall identify safety measures to be implemented by construction contractors during construction, including all safety measures included in the Valley Fever Management Plan prepared pursuant to Mitigation Measure HAZ-3(a). Prior to initiating any grading, the Project applicant shall provide the County with copies of all educational training material for review and approval. No later than 30 days after any new employee(s) begin work, the Project applicant shall submit evidence to the County that each employee has acknowledged receipt of the training (e.g., sign-in sheets with a statement verifying receipt and understanding of the training).

HAZ-3(d) Valley Fever Information Handout

The Project applicant shall work with a medical professional, in consultation with the County, to develop an educational handout for on-site workers, and include the following information on Valley Fever: the potential sources/causes, the common symptoms, the options or remedies

available should someone be experiencing these symptoms, and places where testing for exposure is available. Prior to construction permit issuance, this handout shall have been created by the applicant and reviewed by the County. A printed version of this handout shall be provided to all on-site workers on their first day at the Project site.

Significance After Mitigation

Impacts would be less than significant after implementation of Mitigation Measures HAZ-3(a) through 3(d).

Threshold b:	Whether the Project would 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

Impact HAZ-4 CONSTRUCTION OF THE SOLAR FACILITY HAS THE POTENTIAL TO ENCOUNTER ASBESTOS-CONTAINING MATERIALS, WHICH COULD RESULT IN A SIGNIFICANT HAZARD TO THE PUBLIC OR ENVIRONMENT. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Solar Facility

The Project site was used for agricultural purposes from prior to 1955 until present. Because of the historic agricultural usage of the Project site, there is a potential for presence of Transite irrigation piping, which may contain asbestos, as noted in the Phase I ESA (Stantec 2016a). Therefore, if Transite pipes that contain asbestos are encountered during construction of the Solar Facility, a significant impact to the public or environment could occur.

PG&E Improvements

Impacts related to asbestos containing materials only apply to specific locations associated with the Solar Facility and not to the PG&E Improvements location. The PG&E Improvements would result in no impacts related to asbestos. No additional mitigation would be required.

Further, the Solar Facility in conjunction with the PG&E Improvements would not result in combined significant effects related to asbestos and no additional mitigation would be required.

Mitigation Measures

The following mitigation would be required for the Solar Facility only.

HAZ-4 Suspected Asbestos-Containing Materials

The Project proponent shall comply with the following mitigation in the event that materials suspected to contain asbestos are uncovered during construction activities:

1. If suspected asbestos-containing materials are discovered during Project construction activities, work within a 100-foot distance of the discovery shall immediately halt and a California certified asbestos professional shall take samples for analysis of the suspect materials.
2. All damaged asbestos-containing materials and asbestos-containing materials that would be disturbed by Project construction activities shall be removed in accordance with federal, state, and local laws and the National Emissions Standards for Hazardous Air Pollutants guidelines before work may recommence.

3. All construction activities shall be undertaken in accordance with Cal/OSHA standards, as contained in Title 8 of the Cal. Code Regs., Section 1529, to protect workers from exposure to asbestos. Construction shall be performed in conformance with federal, state, and local laws and regulations so construction workers and/or the public avoid significant exposure to asbestos-containing materials.

Significance After Mitigation

Solar Facility impacts would be less than significant after implementation of Mitigation Measure HAZ-4. Impacts from the PG&E Improvements would be less than significant without mitigation.

Threshold b:	Whether the Project would 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

Impact HAZ-5 CONSTRUCTION OF THE SOLAR FACILITY HAS THE POTENTIAL TO ENCOUNTER PETROLEUM PRODUCTS IN THE ON-SITE SOIL, WHICH COULD RESULT IN A SIGNIFICANT HAZARD TO THE PUBLIC OR ENVIRONMENT. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Solar Facility

Soil staining was observed near the on-site agricultural wells and pumps, fuel ASTs, turbine oil ASTs, diesel powered agricultural engines, and engine oil ASTs. According to the Phase I ESA, the presence of petroleum products and observed soil staining is considered a REC, and petroleum hydrocarbons may be present at concentrations exceeding regulatory thresholds. Construction activities could therefore result in potential health impacts to workers exposed to on-site soils, and a significant impact could occur.

PG&E Improvements

Impacts related to petroleum products from ASTs only apply to specific locations associated with the Solar Facility and not to the PG&E Improvements location. The PG&E Improvements would result in no impacts related to petroleum products from ASTs. No mitigation would be required.

Further, the Solar Facility in conjunction with the PG&E Improvements would not result in combined significant effects related to petroleum products from ASTs and no additional mitigation would be required.

Mitigation Measures

The following mitigation would be required for the Solar Facility only.

HAZ-5 Hazardous Materials Soil Sampling and Remediation

Prior to issuance of grading permits, for construction activities near the potential Recognized Environmental Concerns, additional soil samples testing for total petroleum hydrocarbons shall be performed near the on-site agricultural wells and pumps, fuel ASTs, turbine oil ASTs, diesel powered agricultural engines, and engine oil ASTs under the supervision of a professional geologist or professional engineer. The County shall review the results of the soil sampling to determine if any additional investigation or remedial activities are deemed necessary. No work shall resume in that

area until the County has provided written authorization that the area does not warrant any additional action.

If concentrations of contaminants are identified in areas of the Project site and are confirmed to pose a potential risk to human health and/or the environment by a qualified environmental specialist, contaminated materials shall be remediated either prior to or concurrent with construction. Remediation shall generally include a management plan which establishes design and implementation of remediation. Cleanup may include excavation, disposal, bio-remediation, and/or any other treatment of conditions subject to regulatory action. All necessary reports, regulations and permits shall be followed to achieve cleanup of the site. The contaminated materials shall be remediated under the supervision of an environmental consultant licensed to oversee such remediation and under the direction of the lead oversight agency. The remediation program shall also be approved by the County. All proper waste handling and disposal procedures shall be followed. Upon completion of the remediation, the environmental consultant shall prepare a report summarizing the project, the remediation approach implemented, and the analytical results after completion of the remediation, including all waste disposal or treatment manifests.

Significance After Mitigation

Solar Facility impacts would be less than significant after implementation of Mitigation Measure HAZ-5. Impacts from the PG&E Improvements would be less than significant without mitigation.

Threshold g:	Whether the Project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires

Impact HAZ-6 THE PROJECT WOULD NOT DIRECTLY OR INDIRECTLY EXPOSE PEOPLE OR STRUCTURES TO SIGNIFICANT RISK OF LOSS, INJURY, OR DEATH INVOLVING WILDLAND FIRES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The Solar Facility is not in a zone of high or very high fire severity hazard, as defined by CAL FIRE. Regardless, fire prevention measures would be implemented to minimize fire risk, as described in Section 2.12.6, *Fire Suppression and Safety Training*. The Applicant would coordinate with the Fresno County Fire District in the development of a Fire Prevention and Emergency Action Plan to address potential exposure to fire and other hazards in the Project site. The Plan would include provisions relating to fire prevention and emergency action training and fire prevention measures. Construction of the Solar Facility would not exacerbate existing hazards related to wildland fires, as it would not construct habitable structures that would expose additional people to risk of harm.

Electrical equipment and materials in the energy storage system could present a flammability hazard and could be susceptible to fire. However, Project elements, including the energy storage system, would be designed and operated in compliance with all applicable local, state, and federal requirements, including Article 480 of the Electrical Code, which identifies insulation and venting requirements for stationary storage batteries, and Section 608 of the California Fire Code, which addresses stationary storage battery systems and includes measures for thermal runaway,[4] ventilation, and other requirements. In addition, the energy storage system monitoring, controls, and operational management systems would provide monitoring, control, and alerts, as necessary,

[4] A "thermal runaway" event refers to an incident whereby a thermo-electrical fault in one battery cell causes one or more nearby cells to overheat and, potentially, catch fire.

based on battery cell, rack, and string voltage and current levels to detect potential thermal issues before a fire starts. The Project controls and Supervisory Control and Data Acquisition (SCADA) system would isolate thermal runaway events, should one happen, and alert site operators and/or local emergency services. As discussed in Section 2.9.5.4, energy storage system containers may also include fire suppression systems, as necessary, for Li-ion battery systems, and flow battery containers would include secondary containment, as necessary, for circulating fluid systems.

Dependent on the battery technology and design selection employed, the battery storage system could trigger additional Fresno County Fire Department requirements, including, but not limited to, additional training of Fire Department personnel. However, the Project would be constructed in accordance with applicable state and local standards, and the Project Applicant would submit Project designs to the Fire Department for review and approval prior to operation of the Solar Facility. During operation of the Project, vegetation at the Project site would be managed such that the maximum vegetation height would not shade the panels, and routine maintenance of the Solar Facility would ensure that electric and electronic devices, switches, circuit breakers, and other systems would be operated safely with regard to fire risk. The driveways to the Project site would be maintained free of vegetation and would provide fire breaks on the site. Project compliance with applicable federal, state, and local laws and regulations related to wildfire protection, including implementation of a Project-specific Fire Prevention and Emergency Action Plan, will reduce potential impacts involving wildland fires to less than significant.

PG&E Improvements

The PG&E Improvements would be located on the western portion of the Project site. The PG&E Improvements would not be in a zone of high or very high fire severity hazard, as defined by CAL FIRE. Wildland fire impacts discussed and impact conclusions reached above would be the same for this portion of the site. Wildland fire impacts associated with the PG&E Improvements would be less than significant. No additional mitigation would be required.

Further, the Solar Facility in conjunction with the PG&E Improvements would not result in combined significant effects related to wildland fires and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.9.2.3 Cumulative Impacts

The geographic scope of consideration for potential cumulative impacts to these considerations encompasses the Project site, a 0.25-mile-radius area around the Project site, and the roadways that could be used to transport hazardous materials for Project use. Risks related to hazards and hazardous materials typically are localized in nature since they tend to be related to onsite site-specific conditions and/or hazards caused by the project's construction or operation. A geographic scope of a 0.25-mile-radius also coincides with the distance used to determine whether hazardous emissions or materials would have a significant impact upon an existing or proposed school.

A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. While cumulative impacts are theoretically possible, they are not probable because of the many safeguards implemented to both prevent and control an accidental release. The chance of one uncontrolled release occurring is unlikely, and the chance of two or more occurring simultaneously is remote. In addition, the extent of potential cumulative impacts is also a function of the proximity of the incidents in relationship to one another, as well as proximity to sensitive receptors. Due to the agricultural nature of the Project site, limited number of adjacent sensitive receptors, and legal requirements related to the handling of hazardous materials, the potential for past, present, and reasonably foreseeable projects to cause a cumulatively considerable impact is considered remote.

As noted, no sites located within 1.0 mile of the Project site are identified as hazards or hazardous materials-related concerns in the GeoTracker database (SWRCB 2020) or the EnviroStor database (DTSC 2020). Thus, there is no evidence of significant adverse cumulative conditions to which the Project and other present or future projects could contribute.

Three future foreseeable projects have been identified within 1.0 mile of the proposed Project and consist of solar farms that would be located adjacent to the project site (refer to Table 3-1, *Cumulative Projects List*, in Section 3.4, *Cumulative Development*). The development, operation, and decommissioning of the proposed project and the three adjacent solar farms would comply with existing regulations governing use, transport, storage, and disposal of hazardous materials resulting in cumulative effects that would be less than significant.

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4.10 Hydrology and Water Quality

This section identifies and evaluates issues related to hydrology and water quality in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, and the results of the impact analysis. The analysis presented in this section is based in part on the information contained in the following Project-specific reports:

- Phase C Hydrology Study for RE Scarlet Solar Project, Fresno County (Westwood Professional Services [Westwood] 2017) contained in Appendix K1
- RE Scarlet Solar Energy Project Hydrology Study Supplement (Rincon 2018a) contained in Appendix K2
- Water Supply Assessment for RE Scarlet Energy Project (Rincon 2018b) contained in Appendix K3

4.10.1 Setting

4.10.1.1 Environmental Setting

a. Regional Setting and Climate

The Project site is located in the southern portion of the San Joaquin Valley. The San Joaquin Valley makes up the southern half of the great California Central Valley. The portion of the valley in which the Project site is located is bounded on the east by the foothills of the Sierra Nevada Range and on the west by the Coast/Diablo Range. The San Joaquin Valley is characterized by a Mediterranean climate of hot, dry summers and cool, rainy winters. Most rainfall occurs between the months of November and March. Average annual precipitation at the Project site is relatively low, ranging from seven to nine inches per year (Rincon 2018b; Appendix K3). The Project site is located in the west-central portion of the southern San Joaquin Valley floor, in a fairly flat area comprised predominantly of floodplain and terrace deposits. The Project site slopes gently downward from approximately 200 feet above mean sea level in the southwest corner to approximately 164 feet above mean sea level in the northeast corner.

b. Surface Water Hydrology

The San Joaquin Valley generally is comprised of two large basins: the San Joaquin Hydrologic Basin, which drains northward to the Delta, and the Tulare Lake Hydrologic Basin, which forms the southernmost extent of the San Joaquin Valley and is internally drained (i.e., it has no natural surface water outlet).

The Project site is within the Tulare Lake Hydrologic Basin, which is bordered by the San Joaquin Hydrologic Basin to the north, the Sierra Nevada mountains to the east, the Coast/Diablo Range mountains to the west, and the Tehachapi mountains to the south. Historically, drainages near the Project site (such as the Kings River) flowed toward and/or into Tulare Lake or other similar features and depressions on the valley floor. Within the Tulare Lake Hydrologic Basin, the Project site is within the Huron hydrologic subarea of the Westlands hydrologic area.

Fresno Slough and Kings River

Approximately 1,742 square miles of the Sierra Nevada mountains drain into the Kings River, which spills onto the San Joaquin Valley floor approximately 50 miles from the Project site, east of the City of Fresno. From there, the majority of the Kings River flows west and southwest toward the historic location of Tulare Lake. However, during flood flows, a portion of the Kings River can connect and drain north to the San Joaquin River watershed. The Fresno Slough is a historic connection between the Kings River and the San Joaquin River, although the Fresno Slough has recently been modified to become part of the large, intricate regional irrigation system. The Fresno Slough functions as both a distributary[1] of the Kings River, as well as a southerly conveyance of irrigation water from the Mendota Pool. The relatively flat grade of the Fresno Slough and the topographic position between two major river systems (the Kings River and San Joaquin River) does permit water to flow in both directions but water rarely flows north. During the irrigation season, water is directed south from the San Joaquin River at the Mendota Pool towards the Kings River through a series of irrigation control structures (e.g., pumps, canals). Only under exceptional circumstances (i.e., when the Kings River is at flood stage) does water flow north through the Fresno Slough to the San Joaquin River.

Project Site Drainage

The Project site and surrounding areas are relatively flat agricultural lands. No drainages or watercourses occur on the Project site (HELIX Environmental Planning, Inc. 2017; Appendix E1). Flood flows at the Project site occur from precipitation on or adjacent to the Project site. Surface flow generated from the Project area flows generally from west to east and ultimately reaches a water channel to the east of the Project site. The channel runs perpendicular to the Project site, approximately 0.5 mile to the east of the site (Westwood 2017; Appendix K1). In addition, the California Aqueduct runs perpendicular to the direction of on-site flood flow, approximately four miles west of the Project site.

c. Surface Water Quality

The Central Valley Regional Water Quality Control Board (CVRWQCB) implements the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) (CVRWQCB 2018), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the Basin Plan (California Water Code Sections 13240–13247). Buena Vista Lake and Tulare Lake, natural depressions on the valley floor, receive flood water from the major rivers during times of heavy stormwater runoff. During extremely heavy runoff, flood flows in the Kings River reach the San Joaquin River as surface outflow through the Fresno Slough. These flood flows represent the only substantial outflows and receiving waters from the Tulare Lake Hydrologic Basin (Basin).

The greatest long-term problem facing the entire Basin is the increase of salinity in groundwater, which could ultimately eliminate the beneficial use of groundwater in the region. Irrigated agriculture, agricultural support activities, and animal confinement operations are also a major contributor to water quality concerns in the Basin, as well as the overdraft of groundwater, silviculture activities using herbicides and increasing sedimentation, mineral extraction activities, erosion, municipal wastewater, and industrial wastewater (CVRWQCB 2018).

[1] A distributary allows stream flow to occur away from a main stream channel, the opposite of a tributary.

d. Groundwater Hydrology

The Central Valley is characterized by one large aquifer composed of numerous smaller interconnected groundwater basins and subbasins. The Project site is located within the Westside Subbasin (5-22.09) within the larger San Joaquin Valley Groundwater Basin (5-22) (California Department of Water Resources [DWR] 2018). The Westside Subbasin is characterized by an upper unconfined to semi-confined aquifer and a lower confined aquifer. The two aquifers are separated by an aquitard known as the Corcoran Clay (E-Clay) member of the Tulare Formation. The depth to the top of the Corcoran Clay varies from approximately 500 feet to 850 feet (DWR 2003). Primary recharge to the aquifer system is from the seepage of Coast Range streams along the west side of the Westside Subbasin and the deep percolation of surface irrigation.

There are two inactive wells on the Project site.

e. Groundwater Quality

Groundwater in the Westside Subbasin generally is high in sulfate, a naturally-occurring mineral, or bicarbonate type. Bicarbonates are high in alkalinity, a measure of the capacity of water to neutralize acid (DWR 2006). The upper aquifer is generally high in calcium and magnesium sulfate. Groundwater below 300 feet and above the Corcoran Clay layer show a tendency to have decreased dissolved solids. In general, the lower aquifer has higher quality water than the upper. Areas of the subbasin have high total dissolved solids, an indication of salt content, in the upper aquifer as wells as some areas of high selenium and boron.

f. Flooding

The Federal Emergency Management Agency (FEMA) produces Flood Insurance Rate Maps (FIRMs) to identify flood zones and areas that are susceptible to 100-year and 500-year floods. Parts of the eastern portion of the Project site are designated as FEMA Flood Hazard Zone A, which refers to the 100-year floodplain, or the area that may be affected by a one percent annual chance flood hazard. The remainder of the Project site is designated as Zone X, which is outside the 500-year flood zone (Westwood 2017; Appendix K1).

4.10.1.2 Regulatory Setting

a. Federal

Federal Clean Water Act

In 1972, Congress passed the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), with the goal of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's waters" 33 U.S.C. Section 1251(a). The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Section 319 mandates specific actions for the control of pollution from non-point sources. The U.S. Environmental Protection Agency (USEPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs).

The CWA provides that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. Amendments to the CWA added a framework for regulating municipal and industrial stormwater discharges, as well as stormwater discharges from construction sites that disturb one or more acres of soil. In California, the SWRCB has been delegated permitting authority for discharges regulated by NPDES permits.

Projects disturbing one or more acres of land, such as the proposed Project, are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (Construction General Permit) and must apply for Construction General Permit coverage. The Construction General Permit requires that the site be assigned a risk level of 1 (low), 2 (medium), or 3 (high) based on sediment and receiving waters risk. The sediment risk level is the relative amount of sediment that can be discharged based on a project's location and type. The receiving water's risk level reflects the risk sediment discharges pose to the receiving waters.

The Construction General Permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which must be prepared before construction begins. At a minimum, a SWPPP must include the following:

- Description of construction materials, practices, and equipment storage maintenance;
- List of pollutants likely to contact stormwater and site-specific erosion and sedimentation control practices;
- List of provisions to eliminate or reduce discharge of materials to stormwater;
- BMPs for fuel and equipment storage;
- Non-stormwater management measures such as installing specific discharge controls during construction activities, including paving operations and vehicle and equipment washing and fueling; and
- Commitment that equipment, materials, and workers will be available for rapid response to spills and/or emergencies.

b. State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) establishes the SWRCB and each RWQCB as the principal State agencies with primary responsibility to coordinate and control water quality in California. The SWRCB establishes statewide policy for water quality control and provides oversight of the RWQCBs' operations. The RWQCBs have jurisdiction over specific geographic areas that are defined by watersheds. In addition to other regulatory responsibilities, the RWQCBs have the authority to conduct, order, and oversee investigation and cleanup where discharges or threatened discharges of waste to waters of the State could cause pollution or nuisance, including impacts to public health and the environment. Fresno County is under the jurisdiction of the CVRWQCB.

The CVWQCB is responsible for the protection of the beneficial uses of waters within Fresno County. The CVRWQCB uses its planning, permitting, and enforcement authority to meet this responsibility and has adopted the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) to implement plans, policies, and provisions for water quality management. The CVRWQCB published the second edition of the Basin Plan, which was approved into law in 1996 and has been subsequently

amended, most recently in May 2018 (CVRWQCB 2018). In accordance with state policy for water quality control, the CVRWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan identifies existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction (CVRWQCB 2018). The Basin Plan also includes water quality objectives that are protective of the identified beneficial uses; the beneficial uses and water quality objectives collectively comprise the water quality standards for a given region and Basin Plan (CVRWQCB 2018). The CVRWQCB also administers the NPDES stormwater permitting program in the Central Valley.

Actions that involve or are expected to involve discharge of waste may be subject to Waste Discharge Requirements (WDR) under the Porter-Cologne Act. Chapter 4, Article 4 of the Porter-Cologne Act (Water Code Sections 13260-13274) states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state (other than into a community sewer system) shall file a Report of Waste Discharge with the applicable RWQCB. However, the CVRWQCB has issued a waiver for certain types of discharges, as discussed below.

The CVRWQCB has adopted a waiver of WDR (Resolution R5-2013-0145, *Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge within the Central Valley Region*) for specific types of low-threat discharges to the land surface within the Central Valley region. Construction dewatering and dredged material disposal to land are among the activities covered by this waiver, provided the subject activities meet the conditions specified within the waiver. Waivers serve much the same purpose as general permits in that waivers are intended to describe a range of protective measures that could be applied to a broad category of activities. This waiver must be obtained from the CVRWQCB for any actions that would potentially involve dewatering and/or long-term storage of excavated material on the land surface.

Sustainable Groundwater Management Act

In 2014, California enacted legislation requiring that critical groundwater resources be sustainably managed by local agencies. The Sustainable Groundwater Management Act (SGMA) gives local agencies the power to sustainably manage groundwater. Under SGMA, critically overdrafted subbasins are required to have prepared and to be managed by a Groundwater Sustainability Plan (GSP) by January 31, 2020 (California Water Code Section 10720.7[a][1]).

The Project site overlies the San Joaquin Valley Groundwater Basin, specifically within the Westside Subbasin. The Westlands Water District (WWD) serves as the Groundwater Sustainability Agency (GSA) for the Westside Subbasin under SGMA. As a GSA for a critically overdrafted, high-priority groundwater basin, WWD adopted a GSP in December 2019. The purpose of the GSP is to characterize groundwater conditions in the Westside Subbasin, evaluate and report on conditions of overdraft, establish sustainability goals and sustainability management criteria, and describe projects and management actions the GSA intends to implement to achieve sustainability by 2040. While WWD's GSP focuses on groundwater management actions by the GSA, actions are considered in the context of the entire basin setting and the actions of all water users in the Westside Subbasin to achieve subbasin-level sustainability (WWD 2019).

Senate Bill 610

In 2003, the governor signed legislation requiring water suppliers or CEQA lead agencies to prepare a Water Supply Assessment (WSA) for projects that meet any of the following criteria (California Water Code Section 10912[a]):

(1) A proposed residential development of more than 500 dwelling units;
(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
(4) A proposed hotel or motel, or both, having more than 500 rooms;
(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
(6) A mixed-use project that includes one or more of the projects specified in this subdivision; and/or
(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

c. Local

Storm Water Quality Management Program

The CVRWQCB's Waste Discharge Requirements Order R5-2013-0080 (NPDES Permit No. CA0083500) prescribes WDRs for the Fresno Metropolitan Flood Control District, City of Fresno, City of Clovis, Fresno County, and California State University Fresno. The Fresno Metropolitan Flood Control District's Fresno-Clovis Storm Water Quality Management Program (SWQMP; Fresno Metropolitan Flood Control District 2013) includes the following components:

- Program Management
- Construction Program
- Industrial and Commercial Program
- Municipal Operations Program
- Illicit Connection and Discharge Program
- Public Involvement and Education Program
- Planning and Land Development Program
- Stormwater Quality Monitoring Program
- Program Effectiveness Assessment and Reporting Program

The SWQMP components listed above are applicable to the proposed Project because the Project is required to implement BMPs consistent with the SWQMP in order to comply with the CVRWQCB WDR Order R5-2013-0080 (NPDES Permit No. CA0083500). Such BMPs may include, but would not be limited to, site-specific measures to prevent runoff of untreated water off-site by using straw wattles and containment measures for the handling and storage of potentially hazardous materials.

Fresno County General Plan

The following policies identified in the General Plan Open Space and Conservation Element and Public Facilities and Services Element (Fresno County 2000) would apply to the Project:

- **Policy OS-A.23**: The County shall protect groundwater resources from contamination and overdraft by pursuing the following efforts:

a. Identifying and controlling sources of potential contamination;
b. Protecting important groundwater recharge areas;
c. Encouraging water conservation efforts and supporting the use of surface water for urban and agricultural uses wherever feasible;
d. Encouraging the use of treated wastewater for groundwater recharge and other purposes (e.g., irrigation, landscaping, commercial, and nondomestic uses);
e. Supporting consumptive use where it can be demonstrated that this use does not exceed safe yield and is appropriately balanced with surface water supply to the same area;
f. Considering areas where recharge potential is determined to be high for designation as open space; and
g. Developing conjunctive use of surface and groundwater.

- **Policy OS-A.25:** The County shall minimize sedimentation and erosion through control of grading, cutting of trees, removal of vegetation, placement of roads and bridges, and use of off-road vehicles. The County shall discourage grading activities during the rainy season unless adequately mitigated to avoid sedimentation of creeks and damage to riparian habitat.
- **Policy PF-C.3**: To reduce demand on the County's groundwater resources, the County shall encourage the use of surface water to the maximum extent feasible.
- **Policy PF-E.6**: The County shall require that drainage facilities be installed concurrently with and as a condition of development activity to ensure the protection of the new improvements as well as existing development that might exist within the watershed.
- **Policy PF-E.11**: The County shall encourage project designs that minimize drainage concentrations and maintain, to the extent feasible, natural site drainage patterns.
- **Policy PF-E.13**: The County shall encourage the use of natural storm water drainage systems to preserve and enhance natural drainage features.
- **Policy PF-E.14**: The County shall encourage the use of retention-recharge basins for the conservation of water and the recharging of the groundwater supply.
- **Policy PF-E.15**: The County should require that retention-recharge basins be suitably landscaped to complement adjacent areas and should, wherever possible, be made available to the community to augment open space and recreation needs.

Fresno County Solar Facility Guidelines

The Fresno County Solar Facility Guidelines (Fresno County 2017) include provisions relevant to hydrology and water quality. These include:

- Information shall be submitted that identifies the source of water for the subject parcel (surface water from irrigation district, individual well(s), conjunctive system). If the source of water is via district delivery, the applicant shall submit information documenting the allocations received from the irrigation district and the actual disposition of the water (i.e., utilized on-site or moved to other locations) for the last 10 years. If an individual well system is used, provide production capacity of each well, water quality data, and data regarding the existing water table depth;
- Identify (with supporting data) the current soil type and mapping units of the parcel pursuant to the standards of the California State Department of Conservation and the Natural Resources Conservation Service; and

- Provide a Reclamation Plan detailing the lease life, timeline for removal of the improvements, and specific measures to return the site to the agricultural capability prior to installation of solar improvements.

Fresno County Development Services and Capital Projects Division

The Development Services and Capital Projects Division provides a complete range of land use, engineering, resource management and development services. Development Services is comprised of three sections: Building and Safety; Development Engineering; and Planning and Environmental Analysis. Prior to issuance of a building permit, development projects are required to submit an Engineered Grading and Drainage Plan for review and approval prior to the County issuing a building permit for construction. A grading permit or voucher shall be required for any grading proposed with this application. Drainage requirements can include the design of an on-site retention basin designed to County Standards to retain the runoff from existing and proposed development.

4.10.2 Impact Analysis

4.10.2.1 Methodology and Significance Thresholds

a. Methodology

This impact analysis focuses on potential effects associated with the Project related to hydrology and water quality. The analysis was based on Project-specific technical studies that assess existing conditions at the Project site, applicable regulations and guidelines, and proposed construction, operation and maintenance, and decommissioning of the Solar Facility. The severity and significance of hydrology and water quality impacts are analyzed in the context of existing regulations and policies aimed at abating potential impacts due to changes in the amount or velocity of stormwater runoff or groundwater recharge.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would have a significant impact if it would:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    i. Result in substantial erosion or siltation on- or off-site;
    ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; and/or
    iv. Impede or redirect flood flows;

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; and/or
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4.10.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the Project would violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality
Threshold e:	Whether the Project would conflict with or obstruct implementation of a water quality control plan

Impact HWQ-1 THE PROJECT WOULD NOT VIOLATE ANY WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Construction and Decommissioning

The Project site is relatively flat, such that there is only a moderate potential for concentrated runoff to occur. This condition would not change with construction of the Solar Facility, as grading would be minimal and occur only as necessary to level dips and hills to accommodate the Solar Facility. Excavation would also be required for proposed foundations for the Solar Facility, as described in Section 2, *Project Description*. The Solar Facility would be constructed to maintain existing drainage patterns as much as possible, thereby minimizing the potential for increased runoff and potential water quality degradation to occur. New impervious surfaces[2] that would be introduced as a result of the Solar Facility constitute approximately 175 acres, or 4.3 percent of the existing 4,089-acre Project site. New impervious surfaces may increase the rate and concentration of surface runoff because runoff cannot percolate to the subsurface; however, due to the relatively small amount of new impervious surfaces associated with the Solar Facility (compared to the overall perviousness of the Project site), the existing flat terrain of the Project site, and the use of BMPs to maintain the existing drainage patterns as much as possible, the Solar Facility would not substantially affect runoff patterns on the Project site. In addition, the Project would be required to prepare and implement an Engineered Grading and Drainage Plan as approved by the County Development Services Division prior to the County issuing a building permit for construction. The grading permit would ensure that proposed grading and drainage features would be consistent with County requirements.

Potential water quality impacts from erosion and sedimentation are expected to be localized and temporary during construction and decommissioning, largely due to the existing flat terrain and the use of stormwater control BMPs discussed above. Activities would disturb more than one acre and would therefore require the Project Applicant to prepare and implement a SWPPP for the Project (including both the Solar Facility and the PG&E Improvements) in accordance with the NPDES General Construction Permit. The SWPPP would include BMPs to be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby drainages and would be applicable to all aspects of the Project, including the Solar Facility. Specific

[2] The term "impervious surfaces" refers to surfaces such as paved roads, paved parking areas, buildings, and other hardscape.

BMPs for the construction phase would be identified in the SWPPP. Typical BMPs could include, but would not be limited to, the following:

- Proper stockpiling and disposal of demolition debris, concrete, and soil
- Installation of a stabilized construction entrance/exit and stabilization of disturbed areas
- Implementation of erosion controls
- Proper management of construction materials
- Proper protections for fueling and maintenance of equipment and vehicles
- Management of waste, aggressive control of litter, and implementation of sediment controls

In addition, during construction and decommissioning of the Solar Facility, any activity that results in the accidental release of hazardous or potentially hazardous materials could result in water quality degradation. Materials that could contribute to this impact include, but are not limited to: diesel fuel, gasoline, lubricant oils, hydraulic fluid, antifreeze, transmission fluid, lubricant grease, cement slurry, and other fluids utilized by construction vehicles and equipment. Motorized equipment could leak hazardous materials such as motor oil, transmission fluid, or antifreeze due to inadequate or improper maintenance, unnoticed or unrepaired damage, improper refueling, or operator error. As noted in Section 4.9, *Hazards and Hazardous Materials,* the Project Applicant would be required to prepare a Hazardous Materials Business Plan (HMBP) 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 construction; and establish public and agency notification procedures for spills and other emergencies, including fires. The Project Applicant would provide the HMBP to all contractors working on the Project site and would ensure that one copy is available at the Project site at all times. Therefore, construction and decommissioning of the Solar Facility would result in a less-than-significant impact to water quality.

Operation and Maintenance

During the operational phase, the Solar Facility would require limited use of hazardous materials, such as fuels, paints, coatings, lubricants, and transformer oil, used for routine daily operations. Accidental release of such materials could occur due to mishandling, improper storage, or accidental leaks or spills, which could result in water quality degradation if the materials become entrained in stormwater. Implementation of the measures included in the HMBP would reduce potential impact to less-than-significant levels by ensuring safe handling of hazardous materials on-site and providing for effective cleanup in the event of an accidental release.

In addition to accidental releases of potential hazardous materials, water quality could also be degraded during operation and maintenance of the Solar Facility as a result of increases in pollutants washed from impervious surfaces. During dry periods, impervious surfaces can collect greases, oils, and other vehicle-related pollutants. During storm events, these pollutants can become entrained in surface waters, resulting in water quality degradation. However, during operation, the Solar Facility would be required to adhere to the SWQMP in accordance with the CVRWQCB-adopted WDR Order R5-2013-0080 (NPDES Permit No. CA0083500). The SWQMP requires site drainage plans be incorporated into development designs that include development standards designed to protect water quality. Specifically, the Project Applicant would be required to prepare and submit a drainage plan to the County for approval of post-construction structural and nonstructural BMPs that could include Low Impact Development (LID) features such as drainage

swales for collection of runoff prior to off-site discharge. Examples of routine structural BMPs include filtration, drainage swales, runoff-minimizing landscape for common areas, energy dissipaters, inlet trash racks, and water quality inlets. Adherence to these requirements would minimize potential for water quality degradation during operation and maintenance of the Solar Facility. Apart from infrequent cleaning of panels with water, which is unlikely to result in off-site discharges due to the relatively low volume of water required, no other discharges would be necessary during operation of the Solar Facility. The Project would not conflict with or obstruct implementation of the Basin Plan. Therefore, operation and maintenance of the Solar Facility would result in a less-than-significant impact to water quality.

PG&E Improvements

An Engineered Grading and Drainage Plan would be required to be prepared and approved by the County Development Services Division for construction of the PG&E Improvements prior to the County issuing a building permit for construction. The grading permit would ensure that proposed grading and drainage features would be consistent with County requirements. In addition, preparation and implementation of a SWPPP would be required which would detail the BMPs to be implemented to prevent soil erosion and discharge of other construction-related pollutants from construction of the PG&E Improvements. With implementation of construction BMPs, construction of the PG&E Improvements would result in a less-than-significant impact to water quality.

Operational activities of the PG&E Improvements would require limited use of hazardous materials, such as fuels, paints, coatings, lubricants, and transformer oil, used for routine inspections and operations. Operation of the PG&E Improvements would comply with existing federal, state, and County laws and regulations pertaining to the storage, transport, and use of hazardous and nonhazardous materials. Compliance with existing regulations would ensure impacts would be less than significant by ensuring safe handling of hazardous materials on-site and providing for effective cleanup in the event of an accidental release. The PG&E Improvements would also increase impervious surfaces by approximately 3 acres, which could lead to offsite transmissions of pollutants and impact water quality. Similar to the Solar Facility, a drainage plan would be required to be prepared and submitted to the County for approval of post-construction structural and nonstructural BMPs that could include Low Impact Development (LID) features such as drainage swales for collection of runoff prior to off-site discharge. Adherence to these requirements would ensure operational impacts to water quality from PG&E Improvements would be less than significant.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to water quality and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold b:	Whether the Project would substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin
Threshold e:	Whether the Project would conflict with or obstruct implementation of a sustainable groundwater management plan

Impact HWQ-2 THE PROJECT WOULD NOT SUBSTANTIALLY DEPLETE GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THE PROJECT WOULD IMPEDE SUSTAINABLE GROUNDWATER MANAGEMENT OF THE BASIN. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The Project site overlies the Westside Subbasin of the San Joaquin Valley Groundwater Basin, which is currently prioritized as a critically overdrafted basin under SGMA (DWR 2019). WWD serves as the GSA for the Westside Subbasin. In December 2019, WWD adopted a GSP (WWD 2019).

Solar Facility

Construction and Decommissioning

The Project site is located on undeveloped land historically used for agricultural activities. During construction, non-potable water would be obtained from an existing private well on the Great Valley Solar Project site and/or purchased from the WWD and trucked to the site from an existing well within five miles. The Project's temporary construction demand would be approximately 360 acre-feet (AF) of water that would be used for dust suppression (including truck wheel washing) and other purposes during construction (see Section 2.10.1, *Water*, of Section 2, *Project Description*).

Potential impacts of the use of groundwater relate to (1) lowering the level of the groundwater table and may include, for example, a result where 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; (2) subsidence; (3) altering surface stream hydrology; and/or (4) causing migration of contaminants. Construction demands would either be met using groundwater supplies, which are understood to recover from short-term periods of heavier pumping,[3] or WWD-provided water, which is managed by the WWD for long-term supply reliability (Appendix K3; Westlands Water District GSA and County of Fresno GSA-Westside 2019). According to the Project-specific WSA, the Project's construction-related water demands would account for approximately 0.18 percent of the Westside Subbasin's annual safe yield of 200,000 acre-feet per year (AFY). Water levels in the Westside Subbasin have historically recovered from periods of heavy pumping (drought years), indicating that overdraft conditions do not persist when the import of surface water returns to non-drought quantities. According to the WSA, regardless of whether water is taken from groundwater or provided by WWD, construction of the Solar Facility would not result in adverse effects on water supply or reliability (Rincon 2018b; Appendix K3). Therefore, impacts during construction would be less than significant. Refer to the cumulative impact analysis for a discussion of the Project's impacts in the context of cumulative development.

Decommissioning would occur up to 35 years after construction. At this time, it is not possible to quantitatively evaluate potential hydrological impacts related to potential groundwater impacts that could result from Project decommissioning, due to the uncertainty of future groundwater conditions

[3] As shown in Table 3 of the WSA prepared for the Project (Appendix K3), while the groundwater elevation in the Westside Subbasin consistently falls during years of more intense pumping, it also consistently recovers during years of less intense pumping, suggesting that water supply recovers after years of temporary overdraft.

and the technology or construction practices that would be available at that time. Therefore, based on current decommissioning practices, as a reasonable worst case, this analysis assumes that hydrological impacts generated during future decommissioning would be similar to hydrological impacts generated during the construction phase, and impacts would be less than significant.

Operation and Maintenance

During operation and maintenance of the Solar Facility, the long-term water demand of the Project would be approximately 20 AFY, which would be met using water provided by either the City of Fresno or the City of Mendota; operational and maintenance water would not be obtained from the well on the Great Valley Solar Project site. The City of Fresno currently relies on a combination of groundwater and surface water supplies to meet water demands in its service area. The City of Fresno's groundwater comes from the Kings Subbasin of the San Joaquin Valley Groundwater Basin, which encompasses a surface area of approximately 976,000 acres (1,530 square miles) in the San Joaquin Valley. The City of Mendota's water supply comes from wells that draw from the Delta-Mendota Subbasin of the San Joaquin Valley Groundwater Basin, and encompasses approximately 747,000 acres (1,170 square miles) in the San Joaquin Valley (Appendix K3).

Water supply is managed per the Fresno County Groundwater Management Plan, the Fresno/Clovis Metropolitan Area Water Resources Management Plan, and the Sustainable Groundwater Management Act, as described in Section 3.1.4 and 3.2.4 of Appendix K3. Since the City of Mendota relies entirely on groundwater resources, supplies are managed in accordance with the SGMA (Appendix K3). Water supply provided to the Solar Facility by the City of Fresno or the City of Mendota would occur in compliance with the aforementioned plans and regulations. Based on this compliance and according to the Project's WSA, the Solar Facility's operational demand of approximately 20 AFY would not result in adverse water supply reliability impacts to the groundwater sources utilized by these municipalities (Appendix K3).

In addition to extracting groundwater, the Solar Facility would result in an increase of 175 acres (or 4.3 percent of the Project site) of impervious surfaces on the Project site from the equipment foundations and other components. The perimeter road and main access roads would be surfaced with gravel, compacted dirt, or another commercially available surface. Internal roads would have permeable surfaces. The panels are not considered impervious surfaces; stormwater falling on the panels would drip off and infiltrate into the ground below or run off during larger storm events into constructed drainage basins. Due to the relatively small amount of new impervious surfaces associated with the Solar Facility, as compared to the overall perviousness of the Project site; the existing flat terrain of the Project site; and the use of BMPs to maintain the existing drainage patterns as much as possible, the Solar Facility would not substantially reduce groundwater infiltration rates associated with precipitation. Therefore, operation and maintenance of the Solar Facility would have a less-than-significant impact on groundwater supplies and groundwater recharge.

Because the Project would have a less-than-significant impact on groundwater supplies and groundwater quality, the Project would not conflict with or obstruct implementation of the WWD's GSP for the Westside Subbasin, and impacts would be less than significant.

PG&E Improvements

Construction of the PG&E Improvements may require limited water for dust suppression and other construction needs. The water use would be temporary and would not lead to a substantial decrease in groundwater supplies or conflict with implementation of a sustainable groundwater

management plan. In addition, according to the WSA, regardless of whether water is taken from groundwater or provided by WWD, construction of the Solar Facility would not result in adverse effects on water supply or reliability (Rincon 2018b; Appendix K3). Water use for the PG&E Improvements would be minimal compared to the Solar Facility. Therefore, impacts during construction would be less than significant.

PG&E Improvements would not require water use during operations or maintenance. The PG&E Improvements would add approximately 3 acres of impervious surfaces to the project site. Due to the relatively small amount of new impervious surfaces associated with the PG&E Improvements compared to the overall perviousness of the Project site; the existing flat terrain of the Project site; and the use of BMPs to maintain the existing drainage patterns as much as possible, the PG&E Improvements would not substantially reduce groundwater infiltration rates associated with precipitation. Therefore, impacts on groundwater supplies and groundwater recharge and conflicts with the implementation of WWD's GSP for the Westside Subbasin would be less than significant.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to groundwater and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold c.i:	Whether the Project would alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or -off-site
Threshold c.ii:	Whether the Project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
Threshold c.iii:	Whether the Project would alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

Impact HWQ-3 THE PROJECT WOULD NOT SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERN SUCH THAT SUBSTANTIAL EROSION, SILTATION, FLOODING, AN EXCEEDANCE OF STORMWATER SYSTEM CAPACITY, OR IMPEDANCE TO FLOOD FLOWS WOULD OCCUR. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Erosion and Siltation

Runoff on the Project site currently occurs as overland flow in a generally west-to-east direction. As discussed in the Phase C Hydrology Study for the Project (Appendix K1), hydrologic modeling was conducted to evaluate runoff characteristics across the Project site, accounting for Project development. This analysis determined that with implementation of the Solar Facility, stormwater flow patterns across the site would remain consistent with existing conditions, and the Project would not cause more than one foot of water surface rise during large storm events. This is consistent with existing flow patterns and discharges associated with 100-year storm events. The hydrologic model discussed in Appendix K1 was a FLO-2D software-based hydrologic and hydraulic model that was employed to predict runoff depths and velocities. Runoff patterns were calculated in the model based on land topography, soil types, vegetation coverage, and precipitation amounts. Based on simulated flood flows for the design storm, runoff depths ranged from 0.5 to 1.5 feet and velocities remained at less than one foot per second across the majority of the Project site.

As described in Appendix K1, there are existing land subsidence conditions in the Project area that may have affected the FEMA Flood boundaries shown on current maps. Accordingly, the Appendix K1 report recommends that final design of the Project should account for FEMA flood elevations by surveying elevation points in the field and analyzing those points in comparison to FEMA flood boundaries, in order to determine where actual flooding on the Project site will occur. As shown in Appendix K1, Table 2, *Added Impervious Areas and Runoff Coefficients*, the hydrologic model accounted for the Project's introduction of new impervious areas associated with the following: gravel road and parking area, gravel landscaping area, total inverter pad area, and total rack pile cross sectional area. Although the final design of the Project may be revised, which is typical of engineering design processes, the new impervious areas associated with the Project are not expected to change substantially. In addition, the Project includes a series of drainage features

including detention basins around the site boundary to protect the Project site from potentially adverse flooding impacts and to maintain existing drainage pattern characteristics to the maximum extent feasible. As discussed above, implementation of the Project would not substantially change drainage across the Project site, and the Project would not increase stormwater flow depths by more than one foot.

In addition, as discussed under Impact HWQ-1, the Solar Facility would be subject to County drainage standards as well as post-construction (operational) measures of the statewide Construction General Permit (SWRCB Order No. 2009-0009-DWQ, as amended), which is administered by the SWRCB. The post-construction measures require the development of a SWPPP, which would include BMPs to control erosion and siltation. The BMPs would include source control and low impact development measures that would be effective in minimizing erosion and siltation. The Solar Facility would also include detention basins designed to collect and treat runoff generated from the Solar Facility site prior to discharge off-site. As described in Section 2.10.3, stormwater storage of 1,907,368 cubic feet (43.8 acre-feet) would be required for the Solar Facility. The basins would be approximately 1.5 feet deep to provide the required storage. Consistent with the existing Project site, which does not encompass surface water bodies, stormwater basins would remain dry except during or after a precipitation event. As described in the Phase C Hydrology Study for the Project (Appendix K1), localized post-construction runoff from the Solar Facility would be directed to the proposed detention basins, which would allow the surface runoff to infiltrate into the underlying aquifer. With implementation drainage standards consistent with County requirements and post-construction BMPs, and construction of the detention basins included as part of the Project design, potential impacts associated with erosion and siltation would be less than significant.

Decommissioning would occur up to 35 years after Project construction. Due to the length of time between Project construction and decommissioning, the information required to quantitatively analyze potential hydrological impacts related to erosion or siltation during decommissioning is not available. For instance, factors such as rain and wind intensity and frequency will influence characteristics of the Project site in ways that can contribute to erosion and siltation impacts. However, it is known that the majority Project site would not be paved during decommissioning. Accordingly, it can be reasonably anticipated that the surface characteristics of the Project site would be relatively comparable to existing conditions. Similar to construction, decommissioning would disturb soil and increase erosion and siltation. Potential impacts to erosion and siltation during decommissioning would be comparable to impacts during the construction period. Accordingly, decommissioning activities would be required to comply with regulations discussed in Impact HWQ-1, such as the preparation of a SWPPP and the installation of BMPs. Therefore, based on current decommissioning practices, as a reasonable-worst case, this analysis assumes that hydrological impacts generated during future decommissioning would be similar to hydrological impacts generated during the construction phase, and impacts would be less than significant.

Surface Runoff Causing Flooding

As discussed above, construction and operation of the Solar Facility would not substantially alter existing on-site drainage patterns and would introduce relatively small areas of new impervious surfaces. Therefore, the Solar Facility would not cause a substantial increase in the rate of surface runoff and the increase in peak flows associated with the Solar Facility, compared to existing conditions, would be relatively minor. In addition, the Solar Facility would include implementation of stormwater design measures, as discussed under Impact HWQ-1, which would minimize or avoid potential for runoff-related impacts to occur as a result of the Solar Facility. With adherence to

County requirements and implementation of Project design features, potential impacts related to the rate or amount of surface runoff associated with the Solar Facility would be less than significant.

Decommissioning would occur up to 35 years after Project construction. At this time, it is not possible to quantitatively evaluate potential hydrological impacts relating to surface runoff that would result from decommissioning, due to the uncertainty of when decommissioning would occur and the technology or construction practices that would be available at that time. Therefore, based on current decommissioning practices, as a reasonable-worst case, this analysis assumes that hydrological impacts generated during future decommissioning would be similar to hydrological impacts generated during the construction phase, and impacts would be less than significant.

Drainage System Capacity

As described above, the Solar Facility would result in a minor increase in peak storm runoff volumes from the Project site. The Solar Facility would include detention basins to collect runoff. The detention basins have been designed to meet County stormwater drainage requirements. Therefore, with adherence to existing drainage control requirements, the minor increase in storm flows would be accommodated by the drainage infrastructure and potential impacts related to stormwater system capacities would be less than significant.

Decommissioning would occur up to 35 years after construction. Due to the length of time between Project construction and decommissioning, the information required to quantitatively analyze potential hydrological impacts related to drainage patterns during decommissioning is not available. For instance, factors such as rain and wind intensity and frequency will influence characteristics of the Project site in ways that can contribute to drainage impacts. However, it is known that the Project site would not be paved. Accordingly, it can be reasonably anticipated that the surface characteristics of the Project site would be relatively comparable to existing conditions, such that potential impacts to erosion and siltation during decommissioning would be comparable to such impacts during the construction period. In addition, as described above, the Project would include implementation of drainage features such as detention basins to collect surface and stormwater runoff and avoid or minimize potentially adverse impacts related to drainage. Accordingly, based on current decommissioning practices, as a reasonable-worst case, this analysis assumes that hydrological impacts generated during future decommissioning would be similar to hydrological impacts generated during the construction phase of the Solar Facility, and impacts would be less than significant.

PG&E Improvements

Compliance with the construction stormwater requirements discussed under Impact HWQ-1, including BMPs to control erosion and siltation required in the SWPPP, would be effective in minimizing erosion and siltation during construction. The PG&E Improvements would add approximately 3 acres of impervious surfaces to the project site, which would not cause a substantial increase in the rate of surface runoff or an increase in peak flows associated compared to existing conditions. However, the PG&E Improvement area would provide an area of approximately 42,108 square feet to capture the projected runoff volume for the proposed improvements during operation. In addition, any operational BMPs would be designed to meet County stormwater drainage requirements and would reduce impacts to stormwater system capacities. Implementation of stormwater design measures, as discussed under Impact HWQ-1, would minimize or avoid potential for runoff-related impacts to occur. Therefore, impacts to erosion

and siltation, flooding from surface runoff, and drainage system capacity from the proposed PG&E Improvements would be less than significant.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to erosion and siltation, flooding from surface runoff, and drainage system capacity and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold c.iv:	Whether the Project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows
Threshold d:	Whether the Project would, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation

Impact HWQ-4 PART OF THE SOLAR FACILITY SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN; HOWEVER, FLOODWATER PATTERNS WOULD NOT BE ALTERED WHEN COMPARED TO EXISTING CONDITIONS, AND POTENTIAL IMPACTS ASSOCIATED WITH IMPEDANCE AND REDIRECTION OF FLOOD FLOWS WOULD BE LESS THAN SIGNIFICANT. IN THE 100-YEAR FLOOD EVENT, THE PORTIONS OF THE SOLAR FACILITY SITE LOCATED IN ZONE A WOULD POTENTIALLY BE INUNDATED. THEREFORE, IF POLLUTANTS ON THE SOLAR FACILITY SITE ARE NOT PROPERLY STORED AND MANAGED IN EMERGENCY FLOOD EVENTS, A SIGNIFICANT IMPACT RELATED TO RELEASE OF POLLUTANTS COULD OCCUR. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

The Project site is not located in a designated dam inundation area for any major stream or region. In addition, the Project site is not located in an area subject to inundation by seiche, tsunami, or mudflow. No impact would occur related to these inundation risks.

Solar Facility

The Project site is located west of an extensive levee system along the Fresno Slough. According to FEMA (2009), portions of the east side of the Solar Facility site are designated FEMA Flood Hazard Zone A (1% Annual Chance Flood Hazard) and the remainder of the Project site is designated Zone X (Area of Minimal Flood Hazard). In the 100-year flood event, the portions of the Solar Facility site located in Zone A would potentially be inundated. The only buildings on-site would be the Solar Facility's two substations, as well as the O&M building (if constructed), which would be located outside the 100-year floodplain. During storm events, surface waters would flow around the Solar Facility's structure foundations. The Phase C Hydrology Study concluded the surface water would have low water depth and velocity across the project site (Appendix K1). The hydrologic conditions in the area are suitable for the proposed Solar Facility, and floodwater patterns would not be altered when compared to existing conditions. Potential impacts associated with impedance and redirection of flood flows would be less than significant.

In the 100-year flood event, the portions of the Solar Facility site located in Zone A would potentially be inundated. Therefore, if pollutants on the Solar Facility site are not properly stored and managed in emergency flood events, a significant impact related to release of pollutants could occur.

As discussed in Section 4.9, *Hazards and Hazardous Materials*, the Project would not involve the routine transport, use, or disposal of hazardous materials, as defined by the Hazardous Materials Transportation Uniform Safety Act. The Solar Facility could contain battery acids, lead acid, sodium sulfur, and sodium or nickel hydride. Battery storage would occur in accordance with OSHA requirements, such as inclusion of ventilation, acid resistant materials, and spill response supplies. All components would have a comprehensive Spill Prevention Control and Countermeasure plan, in accordance with all applicable federal, state, and local regulations.

As also discussed in Section 4.9, *Hazards and Hazardous Materials*, per California Health and Safety Code Section 25500, the Project Applicant would be required to prepare and submit an HMBP to the Fresno County Division of Environmental Health. The primary purpose of the HMBP requirement is to provide basic information needed by first responders to prevent or mitigate damage to the public health and safety and to the environment from a release or threatened release of a hazardous material. HMBPs must include facility information, a hazardous materials inventory (including a site map and plan), as well as emergency response and training plans. Mitigation Measure HWQ-4 requires the Project applicant to include flood inundation plans in the emergency response plan section of the HMBP.

PG&E Improvements

The PG&E Improvements would be located on the western portion of the Project site, which is not located within a 100-year floodplain. Specifically, the PG&E Improvements would be located on the portion of the Project site that is designated as Zone X, which is outside the 500-year flood zone. Therefore, no impact related to redirection of flood flows or risk release of pollutants due to project inundation would occur and no mitigation is required.

The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to redirection of flood flows or risk release of pollutants due to project inundation and no additional mitigation is required

Mitigation Measures

The following measure is applicable to the proposed Solar Facility:

HWQ-4 Hazardous Materials Business Plan Inundation Measures

In addition to the HMBP requirements established by California Health and Safety Code Section 25500 and the Fresno County Division of Environmental Health, the Project's HMBP shall include a flood inundation plan in the emergency response plan section.

Significance After Mitigation

Impacts would be less than significant after implementation of Mitigation Measure HWQ-4.

4.10.2.3 Cumulative Impacts

Multiple projects, many of which are solar energy production facilities within 3 miles of the Project, are proposed throughout the region. The geographic scope used for the cumulative analysis for hydrology is the Westside, Kings, and Delta-Mendota Subbasins of the San Joaquin Valley Groundwater Basin. This geographic extent is appropriate for the issue area of hydrology and water quality because groundwater provides the primary water source within the project area, and surface water is typically only present in direct response to precipitation events. The Project may cause impacts to hydrology, surface water, or groundwater that could combine with the impacts of other projects in the cumulative scenario from when surface activities first alter drainage patterns or require water to when hydrological conditions are returned to a substantially pre-Project condition and Project-related water needs cease.

Cumulative demand for groundwater during the construction phase of cumulative projects occurring in the vicinity would be short-term. Groundwater levels in the region typically recover from short-term periods of heavier than average withdrawal. Additionally, as described in the WSA provided as Appendix K3, WWD manages the Westside Subbasin for long-term supply reliability; accordingly, WWD actively manages groundwater resources toward the goal of providing long-term reliability and sustainability of the region. As discussed in the WSA for the proposed Project (Appendix K3), the WWD's annual contract entitlement from USBR's CVP is currently 1.15 million AFY. The annual safe yield of the underlying confined groundwater aquifer in the Westside Subbasin of the San Joaquin Valley Groundwater Basin adds about another 200,000 AFY, of which the Project's construction demand accounts for 0.18 percent. Based on the Project's water demands being a small percentage of both the WWD's annual contract for imported water and of local groundwater, as well as WWD's role and responsibility as the GSA to manage groundwater for long-term sustainability, it is reasonable to conclude that the WWD would not use or distribute their supplies in such a way that would be unsustainable to long-term water supply reliability, based on existing management programs. If existing management programs within the Westside Subbasin do not alleviate overdraft conditions or provide the planned long-term sustainability, legal mechanisms could be implemented to adjudicate the basin and ultimately quantify the amount of groundwater allocated to each user within the basin. However, those mechanisms have not been employed because the WWD is actively managing the groundwater basin as a GSA, in accordance with the 2014 Sustainable Groundwater Management Act. Therefore, the cumulative construction-related water demand is not anticipated to result in substantial groundwater depletion. Cumulative impacts associated with groundwater depletion would not be significant, and the Project's contribution would not be cumulatively considerable.

Operational water for the proposed Project would be obtained from the City of Fresno or the City of Mendota, depending upon which supplies are able to meet Project needs, including with regards to cumulative projects occurring at the time of Project implementation. Both the Westside and Kings Subbasins are located within the jurisdiction of the CVRWQCB and are subject to management per the Basin Plan (Appendix K3). It is reasonably assumed that the City of Fresno and City of Mendota would not use or distribute their allocated imported water or natural water supplies in such a way that would be unsustainable to long-term groundwater supply reliability. Any water obtained for the Project from the City of Mendota would be pumped from a metered well under the supervision of City staff. It is anticipated that should adverse effects of Project-related groundwater pumping become apparent at a City of Mendota well, City staff would cease such pumping activities and Project operational water would be obtained from an alternate source.

Operational water demands associated with other projects in the cumulative scenario, including the Luna Valley Solar I, Heartland 1 and 2, and Sonrisa Solar projects, are reasonably anticipated to be substantially lower than construction water demands, due to the nature of construction activities typically requiring a substantially greater water supply than operational activities, as is the case with the proposed Project. It is not possible to quantify all construction- and operation-related water demands of other projects in the cumulative scenario; however, for the purposes of this analysis, in the absence of project-specific data, it is reasonably anticipated that all projects in the cumulative scenario are subject to the same regulatory requirements as the proposed Project, and that local water sources would also be used, as with the proposed Project. Therefore, the local and regional groundwater management mechanisms that are in place, including but not limited to the WWD acting as the GSA for local groundwater, help to avoid or minimize potentially adverse cumulative impacts. In addition to WWD's role as the GSA, the Fresno County Solar Guidelines require projects to identify the source of water that will be used and to provide data on water deliveries and/or production capacities of wells; these requirements will improve data availability to inform cumulative analyses in the future, and to provide the continued long-range management of groundwater sustainability in the region. As described above, the Project's water supply requirements are a small percentage of water supply availability, and water supply in the region is actively managed toward long-range sustainability. Therefore, the Project would not have a cumulatively considerable contribution to the cumulative scenario, and there would not be a significant cumulative impact due to operational groundwater demand.

During construction and decommissioning, cumulative projects would be required to implement a SWPPP and associated BMPs to minimize potential for release of pollutants and sediment into surface water. These construction requirements are intended to protect water resources on a watershed basis and not just a site-specific basis. Pursuant to compliance with these existing requirements, cumulative impacts associated with water quality degradation would not be significant, and the Project's contribution would not be cumulatively considerable.

With respect to erosion, drainage, and flooding, the Project would implement drainage control measures in accordance with County drainage standards and post-construction measures of the statewide Construction General Permit (SWRCB Order No. 2009-0009-DWQ), which would minimize direct impacts on erosion, drainage, and flooding. Other cumulative projects would be required to implement similar measures to minimize erosion and drainage related impacts. Flooding related impacts tend to be site-specific hazards that do not combine to result in cumulative impacts, provided that projects are not redirecting or impeding flood flows. The Project would not result in substantial impediment or redirection of flood flows, and the Project's contribution to cumulative impacts associated with erosion, drainage, and flooding would not be cumulatively considerable.

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4.11 Land Use and Planning

This section describes existing land uses as well as land use plans and policies relevant to the Project, and the associated regulatory framework. The impact analysis presents the criteria used to evaluate the significance of impacts on land use and planning as a result of implementing the Project, the methods used to evaluate these impacts, and the results of the impact assessment.

4.11.1 Setting

4.11.1.1 Environmental Setting

The Project site is designated as Agriculture in the Fresno County General Plan (2000) and is zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size). The Project site is located on approximately 4,089 acres in unincorporated western Fresno County that, for the past 10 years, intermittently have been in low-yield agricultural production for winter wheat, intermittently irrigated and harvested for alfalfa seed or other crops, or disked twice a year and left fallow. All parcels on the Project site are currently owned by Westlands Water District (WWD). Some of the parcels in the Project footprint are part of WWD settlements that require a non-irrigation covenant upon transfer of ownership. For the portion of the Project site that is cultivated without the benefit of irrigation, the productivity of crops depend entirely on rainfall. When the unirrigated crops fail to mature to harvest, the land is grazed as rangeland grasses.

The Project site is located south of West South Avenue, north of West Dinuba Avenue, east of SR 33 (Derrick Avenue), and west of South San Mateo Avenue (see Figure 2-2 in Section 2, *Project Description*). A small portion of the Project site is currently developed with the Tranquillity Switching Station. Two existing PG&E transmission lines are located on the north side of Dinuba Avenue, along the southern portion of the Project site. There also are existing PG&E utility lines within the Project site that would remain in place with an easement granted to PG&E for access.

As shown in Figure 2-2, approximately 76 acres of federally owned land are surrounded by the Project site but are not proposed as part of the Project. This land would not be contained within the Project fence line, and existing legal access would be retained. It is anticipated that the existing use of this land for occasional dry farming followed by periods of fallow use would continue if the Project is approved.

Existing land uses surrounding the Project site consist of agriculture, solar development, and two rural residences. Non-irrigated agricultural land surrounds the Project site to the north, east, and west. These lands are owned mostly by WWD, which keeps them in various states of low-value agricultural production. The Great Valley Solar Facility and two rural residences border the Project site to the south. The Adams East Solar Facility is located approximately 0.4 mile northwest of the Project site. The Project site is approximately 3.5 miles west-southwest of the community of Tranquillity and approximately 6.5 miles east of Interstate 5 (I-5).

4.11.1.2 Regulatory Setting

a. Federal

No federal statutes, regulations, plans, or policies govern land use or planning on the Project site.

b. State

California Public Utilities Commission General Order No. 131-D

The CPUC would have sole and exclusive jurisdiction over the siting and design of the proposed PG&E Improvements because it authorizes the construction, operation, and maintenance of investor-owned public utility facilities. Although such projects are exempt from local land use and zoning regulations and discretionary permitting (i.e., they would not require any land use approval that would involve a discretionary decision to be made by Fresno County), CPUC General Order No. 131-D Section XIV.B requires that public utilities consult with local agencies regarding land use matters when locating a site for a project. The Project Applicant anticipates that the PG&E Improvements would qualify for a permit exemption under General Order No. 131-D Section III.B(1)(f), and that PG&E would file a Notice to Construct with the CPUC for the construction of the PG&E Improvements (CPUC 1995).

c. Local

After construction, the PG&E Improvements would be under the sole and exclusive jurisdiction of the CPUC and exempt from local regulations. Excluding the PG&E Improvements, the Project is subject to County approval and must be consistent with all applicable policies and regulations in the County General Plan and the County Zoning Ordinance.

Fresno County General Plan

The Fresno County General Plan was adopted on October 3, 2000 and is the County's long-range planning document. The General Plan consists of seven elements: Economic Development, Agriculture and Land Use, Transportation and Circulation, Public Facilities and Services, Open Space and Conservation, Health and Safety, and Housing. General Plan goals, policies, and implementation programs that are applicable to the Project are listed in Appendix L1.

It is noted that in 2006, the Fresno County Board of Supervisors directed County staff to initiate a review of the General Plan. The updated General Plan's Background Report and Policy Document were released for public review on January 26, 2018 (Fresno County 2018) and the County is currently preparing a Program EIR for the updated General Plan. Because the updated General Plan has not been approved, the 2000 General Plan continues to govern use on the Project site.

The Project site is designated by the General Plan as "Agriculture," which allows for the production of crops and livestock; location of necessary agriculture commercial centers and agricultural processing facilities; and certain non-agricultural activities (refer to General Plan Table LU-3). The Agriculture and Land Use Element describes the County's land use intensity and development standards for unincorporated land within the County, and sets goals, policies, and implementation programs for Resource Lands (including agriculture), Rural Development (non-agriculture), Urban Development, and Administration (Fresno County 2000).

No overlay designations, regional plans, community plans, or specific plans included in the General Plan apply to the Project site, and there are no lands under a Williamson Act contract on the Project site.

Fresno County Zoning Ordinance

According to the Fresno County Zoning Map, the Project site is zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) (Fresno County n.d.). The Fresno County Zoning Ordinance Chapter 2,

Section 816.2.D identifies electrical transmissions substations and electric distribution substations as uses permitted subject to Director Review and Approval (DRA) (Fresno County 2011a). Fresno County processes PV solar facility projects through a separate use permit process (the Unclassified Conditional Use Permit [CUP] process) for public utility and public services, structures, uses, and buildings, per Zoning Ordinance Chapter 3, Section 853.B.14 (Fresno County 2011b). When a project, such as the proposed Project, is subject to two or more separate use permits, the County evaluates the entire project under the more intensive process. Since the CUP process is more intensive than the DRA process, the County is reviewing the proposed substations as part of the CUP process for the larger facility. Thus, the substations and switchyard, including one high-voltage 230 kV utility switchyard, a supervisory control and data acquisition (SCADA) system, and two 65-foot high dead-end structures proposed as part of the Project do not require a separate DRA.

Fresno County Solar Facility Guidelines

The Fresno County Solar Facility Guidelines (Solar Guidelines), adopted by the Fresno County Board of Supervisors on May 21, 2013 and revised on December 12, 2017, provide general guidelines and policies, as well as an outline for the process of evaluating PV solar facilities in Fresno County (Fresno County 2017). Several provisions for solar facilities are relevant to this analysis of potential impacts to land use and planning, including:

1. Information shall be submitted regarding the historical agricultural operation/usage of the parcel, including specific crop type and crop yield, for the last 10 years (if no agricultural operation in the last 10 years, specify when land was last in agricultural use).
3. Identify the current status of the parcel (Williamson Act Contract, Conservation Easement, retired land, etc.), the purpose of any easement, and limitations of the parcel. The applicant shall submit a Title Report or Lot Book Guarantee for verification.
5. List all proposed measures and improvements intended to create a buffer between the proposed solar facility and adjacent agricultural operations (detailed information must be shown on Site Plan) and provide factual/technical data supporting the effectiveness of said proposed buffering measure.
7. Provide information documenting efforts to locate the proposed solar facility on non-agricultural lands and non-contracted parcels and detailed information explaining why the subject site was selected.
9. The applicant must acknowledge the County's Right to Farm Ordinance and shall be required to record a Right to Farm Notice prior to issuance of any permits. This shall be included as a recommended Condition of Approval of the land use entitlement.
10. Note: The life of the approved land use permit will expire upon expiration of the initial life of the solar lease. If the solar lease is to be extended, approval of a new land use permit will need to be obtained.

All guidelines included in the Solar Guidelines are listed in Appendix L2.

4.11.2 Impact Analysis

4.11.2.1 Methodology and Significance Thresholds

a. Methodology

Potential effects are assessed with respect to land use and planning based upon existing publications and maps completed by Fresno County. The potential for impacts to land use and planning is analyzed using available information regarding Project construction, operation and maintenance, and decommissioning provided by the Project Applicant. In addition, the severity and significance of land use and planning impacts are analyzed in the context of existing regulations and policies aimed at lessening potential impacts to land use and planning.

b. Significance Thresholds

Based on the State CEQA Guidelines, the Project would have a significant impact if it would:

a. Physically divide an established community; and/or
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

The Initial Study in Appendix A determined that the Project would not result in significant impacts with respect to physically dividing an established community (threshold a). Therefore, this issue is not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for a discussion of this issue.

4.11.2.2 Project Impacts and Mitigation Measures

Threshold b:	Whether the Project would cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect

Impact LU-1 THE PROJECT WOULD BE CONSISTENT WITH THE FRESNO COUNTY GENERAL PLAN, COUNTY ZONING ORDINANCE, AND COUNTY SOLAR GUIDELINES, AND WOULD THEREFORE NOT CONFLICT WITH APPLICABLE PLANS, POLICIES, OR GUIDELINES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT. NO IMPACT WOULD OCCUR.

Solar Facility

The County of Fresno is processing the permit applications for the Project in accordance with the Unclassified CUP process for public utility and public services, structures, uses, and buildings, as described in Zoning Ordinance Chapter 3, Section 853.B.14. The Project applicant has filed an Unclassified CUP application to construct, operate, maintain, and decommission the proposed Solar Facility on the Project site. Compliance with conditions of approval for the Unclassified CUP would ensure that the Solar Facility would not conflict with applicable goals, policies, and guidelines in the Fresno County General Plan, County Zoning Ordinance, and County Solar Guidelines that have been adopted for the purpose of avoiding, reducing, or mitigating environmental effects. For example, the Solar Facility would be consistent with General Plan Policy LU-A.13, which requires the protection of agricultural operations from conflicts with non-agricultural uses, and General Plan Policy LU-A.14, which requires an assessment of the conversion of productive agricultural land from

proposed development, because the Solar Facility would not permanently convert the Project site to a non-agricultural use. A buffer would be maintained between the Solar Facility and adjacent agricultural operations, and a reclamation plan would be implemented during decommissioning of the Solar Facility to return the site to a state of readiness for agricultural use.

The Solar Facility would also be consistent with General Plan Policy TR-A.2, which provides Level of Service (LOS) standards for intersections. According to the Traffic Impact Study (included as Appendix N), the Solar Facility would cause the intersections of Manning Avenue/James Road and SR 180/James Road to operate at unacceptable LOS due to construction traffic. However, as a Condition of Approval, the City would require the implementation of a Traffic Management Plan, which would include but not be limited to provisions for the timing of deliveries, a flagger directing construction traffic, and ensuring emergency access. According to the Traffic Impact Study, this Condition of Approval would ensure LOS at area intersections would not exceed standards (Appendix N). The Project would not generate a substantial number of trips during operation which would impact LOS at area intersections and roadways.

The Solar Facility would also be consistent with Section 816.5.D, *Building Height*, of the County Zoning Ordinance, which prohibits buildings in an AE district from exceeding 35 feet in height. As shown in Figure 2-5 in Section 2, *Project Description*, building height would be 15 feet or less. A comprehensive evaluation of the Solar Facility's consistency with applicable goals and policies of the Fresno County General Plan is provided in Appendix L1.

The Unclassified CUP would be required to comply with the Fresno County Solar Facility Guidelines. As described in Section 4.11.1.2, *Regulatory Setting*, the Solar Facility Guidelines outlines the process and key information necessary to evaluate PV solar facilities, which are used to minimize the impacts of the Solar Facility on adjacent agricultural operations. To comply with the Guidelines, the Solar Facility would, for example, maintain a 50-foot buffer between the proposed Solar Facility and adjacent agricultural operations and would implement a reclamation plan to restore the site to prior agricultural use conditions after decommissioning of the Solar Facility. The Guidelines require the disclosure of specific information, which include historical agriculture operation, water sources, identification of soil types, and traffic impacts. This information has been detailed in this EIR and appendices, consistent with the Guidelines. The Project Applicant prepared a Pest and Weed Management Plan detailing methods of exotic weed, rodent, nuisance arthropod, and vector control during operation and after decommissioning, consistent with the Guidelines. In addition, the applicant has committed to making a reasonable effort to establish a point of sale in Fresno County for equipment and construction-related items necessary for the Project and to hire from local workforce (Appendix L2). A detailed evaluation of the Solar Facility's consistency with the Fresno County Solar Facility Guidelines is provided in Appendix L2

Because the Solar Facility would be consistent with the applicable provisions of the Fresno County General Plan, County Zoning Ordinance, and County Solar Facility Guidelines, the Solar Facility would not conflict with any applicable land use plan, policy, or regulation. Accordingly, no impact would occur.

PG&E Improvements

Construction traffic from PG&E improvements was included in the Traffic Impact Study LOS analysis and Condition of Approval measures. The PG&E Improvements would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project that has been adopted for the purpose of avoiding or mitigating an environmental effect, and impacts would be less than significant.

The CPUC has sole and exclusive jurisdiction over the siting and design of the PG&E Improvements. As discussed above, CPUC General Order No. 131-D states that local jurisdictions acting pursuant to local authority are preempted from regulating electric facilities and lines constructed by a publicly owned utility subject to the CPUC's jurisdiction, such as PG&E. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters. The requisite consultation has occurred for the PG&E Improvements by the County's review of the potential associated impacts as part of this EIR analysis. The County has evaluated in this EIR whether the PG&E Improvements are consistent with the County land use plans, policies, and regulations and has determined that no conflict exists. Therefore, no impact would occur. The Solar Facility in conjunction with the PG&E Improvements would not result in additional combined significant effects related to land use conflicts and no mitigation is required.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

No impact would occur and no mitigation is required.

4.11.2.3 Cumulative Impacts

The Project would not result in any impact on land use and planning. The adjacent Luna Valley Solar I, Heartland, and Sonrisa Solar projects would also require a CUP, which would ensure that they would not conflict with applicable goals, policies, and guidelines in the Fresno County General Plan, County Zoning Ordinance, and County Solar Guidelines that have been adopted for the purpose of avoiding, reducing, or mitigating environmental effects. Potential environmental impacts from land use conflicts are addressed on a case-by-case basis as individual projects are reviewed by County decision-makers for consistency with adopted policies. Therefore, cumulative land use impacts would be less than significant.

4.12 Noise

This section identifies and evaluates issues related to noise in the context of the Project. It describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used to evaluate these impacts, and the results of the impact analysis. The analysis herein is also based on noise measurements and modeling included as Appendix M.

4.12.1 Setting

4.12.1.1 Environmental Setting

a. Overview of Noise

Noise is defined in this analysis as unwanted sound that disturbs human activity. Noise level (or volume) is generally measured in decibels (dB), using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to make evaluation consistent with human hearing response.

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive. Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. In general, a 3 dBA change in community noise levels is noticeable, while 1 to 2 dB changes generally are not perceived. Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads and vegetated ground typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures: generally, a single row of buildings between the receptor and the noise source reduces the noise level by approximately 4.5 dBA. A noise barrier from transportation systems typically reduces noise levels by 5 to 15 dBA (Federal Transit Administration [FTA] 2018). According to the California Department of Transportation (Caltrans) and the Center for Hearing and Communication (CHC), the following are typical noise levels for common indoor and outdoor activities (Caltrans 2018; CHC n.d.):

- 0 dBA: lowest threshold of human hearing
- 10 dBA: normal breathing
- 20 dBA: bedroom at night, quiet night in rural area
- 30 dBA: library, soft whisper
- 40 dBA: quiet night in an urban area
- 50 dBA: dishwasher in nearby room, quiet day in an urban area
- 60 dBA: traffic, normal conversation
- 70 dBA: gas lawnmower at 100 feet, vacuum cleaner at 10 feet
- 80 dBA: garbage disposal, diesel truck at 50 feet
- 110 dBA: rock band, shouting in ear

In addition to the instantaneous measurement of actual sound levels, the duration of sound is important to measure as sounds that occur over a long period are more likely to be an annoyance or

to cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (L_{eq}). The L_{eq} is defined as the single, steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time (essentially, the average noise level over a one-hour period). L_{max} is the highest sound pressure level and L_{min} is the lowest sound pressure level within the measuring period.

The time during which noise occurs is important, as noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using either Day-Night Average Level (Ldn) which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.), or Community Noise Equivalent Level (CNEL) which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a 10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB.

b. Vibration

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building, there is less adverse reaction.

Typical outdoor sources of vibration that propagates through the ground and creates perceptible ground-borne vibration in nearby buildings include construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is fairly smooth, vibration from rubber-tired traffic is rarely perceptible (FTA 2018).

Ground-borne vibration related to human annoyance is generally expressed in vibration decibels (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB (FTA 2018). A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. A vibration velocity level of 85 VdB would be an acceptable level only if there are an infrequent number of events per day. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction-related ground-borne vibration in relation to its potential for building damage can also be measured in inches per second (in/sec) peak particle velocity (PPV).

c. Sensitive Receptors

The Fresno County General Plan Noise and Safety Element identifies “normally acceptable,” “conditionally acceptable,” “generally unacceptable,” and “land use discouraged” noise levels for a variety of land use and development types (Fresno County 2000). The most noise-sensitive land uses include residences, motels, and hotels, schools, libraries, churches, hospitals, and nursing homes. Sensitive receptors near the Project site include two rural residences, approximately 100 feet south and 350 feet south of the southern Project site boundary. Both residential properties are adjacent to SR 33, approximately 90 feet and 140 feet from the centerline, respectively. Additional residences are located along the identified construction haul route, including those along James Road (approximately 60 feet to 350 feet from the centerline of James Road), and receptors in the unincorporated community of Tranquillity. Noise-sensitive receptors in Tranquillity include Saint Paul’s Catholic Church (approximately 50 feet from the centerline of James Road), Tranquillity High School (approximately 690 feet from the centerline of James Road), Tranquillity Elementary School

(approximately 1,400 feet from the centerline of James Road), the Tranquillity Branch Library (approximately 500 feet from the centerline of James Road), and Janetski Field (approximately 670 feet from the centerline of James Road). Figure 4.12-1 shows identified noise-sensitive receptors.

d. Existing Noise Levels

The noise environment of the Project site is characterized by open space, rural residential, agricultural, and existing solar facility uses with low ambient noise levels during the evening and nighttime hours. The primary ambient noise sources on the Project site and in the surrounding area are wind, fauna (birds, small mammals, etc.), and vehicle noise on nearby roadways. The segment of SR 33 closest to the Project site carries approximately 1,900 average daily vehicle trips (Caltrans 2016).

Four weekday, mid-morning, and afternoon 15-minute ambient noise measurements were taken at the Project site, using an ANSI Type II integrating sound level meter on July 2, 2018. These noise measurements provide an estimate of the general noise environment on and around the Project site. Figure 4.12-1 shows the noise measurement locations. Table 4.12-1 describes the noise measurement locations and measured noise levels.

Table 4.12-1 Noise Measurement Results

Measurement Location	Primary Noise Source	Sample Time	L_{eq}	L_{max}	L_{min}
1 – Adjacent to Sensitive Receptor approximately 350 feet south of the Project site, adjacent to SR 33	Traffic along SR 33	12:09 p.m. – 12:24 p.m.	39	61	31
2 – Adjacent to Sensitive Receptor approximately 100 feet south of the Project site, adjacent to SR 33	Traffic along SR 33	11:15 a.m. – 12:06 p.m.	41	73	31
3 – Adjacent to W Manning Avenue, near western boundary of the Project site	Traffic along SR 33	11:14 a.m. – 11:29 a.m.	43	53	33
4 – Adjacent to SR 33, near an existing solar facility northwest of the Project site	Traffic along SR 33	10:31 a.m. – 10:46 a.m.	43	68	32

Notes: See Appendix M1 for noise measurement data sheets

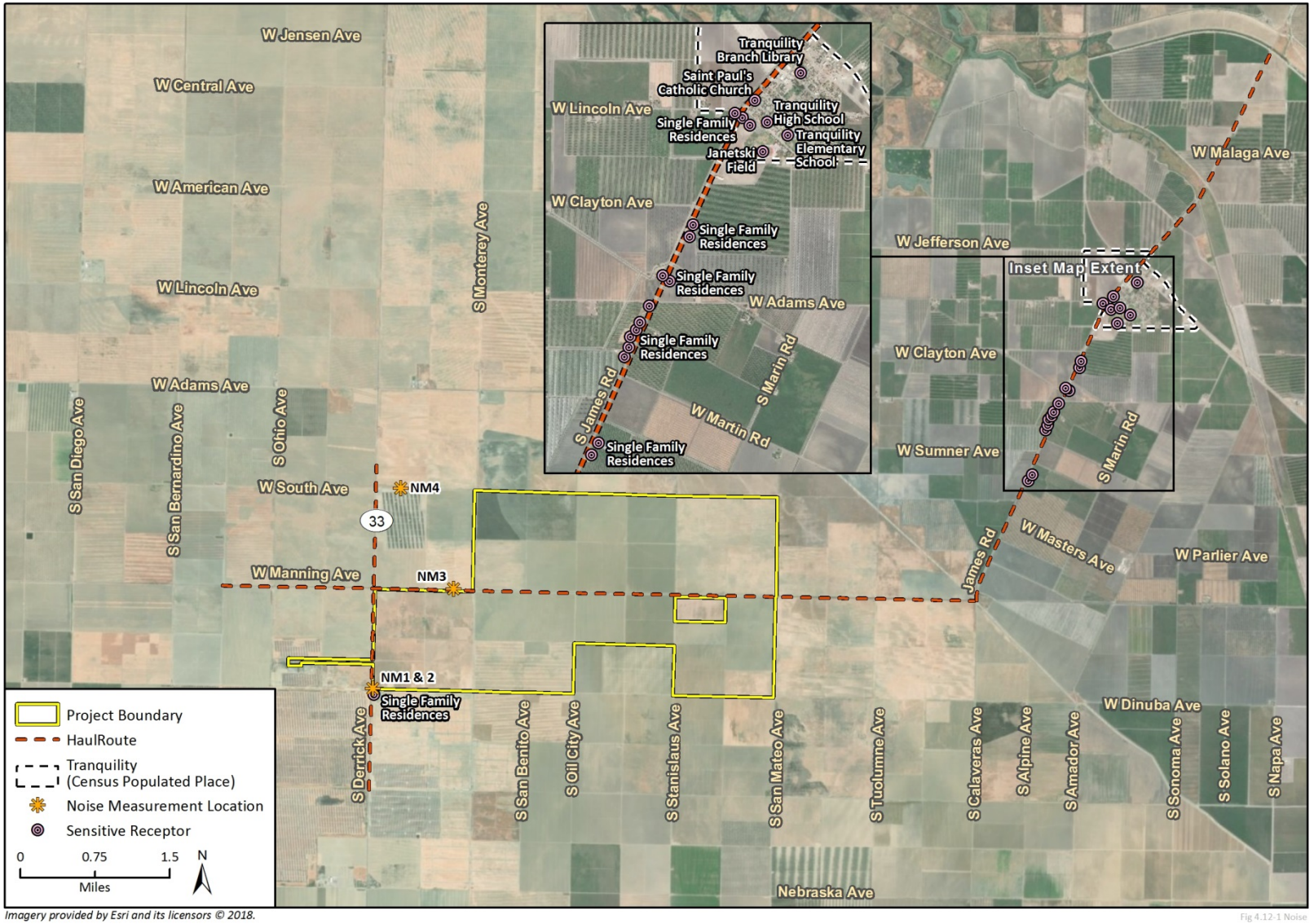
L_{eq} = the single, steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time

L_{max} = the highest sound pressure level within the measurement period

L_{min} = the lowest sound pressure level within the measurement period

Source: Field visit on July 2, 2018 using ANSI Type II integrating sound level meter

Figure 4.12-1 Noise Measurement Locations, Haul Route, and Sensitive Receptors



4.12.1.2 Regulatory Setting

a. Federal

The FTA has recommended noise criteria related to traffic-generated noise. Recommendations contained in the FTA's *Transit Noise and Vibration Impact Assessment* can be used to determine whether a change in operational traffic would result in a substantial permanent increase in noise (FTA 2018). Under the FTA standards, a substantial increase in noise exposure is determined based on the existing ambient noise exposure, where higher ambient noise levels have a lower threshold for a substantial noise exposure increase. Table 4.12-2 shows the FTA thresholds for increases in operational traffic-related noise levels.

The FTA also recommends vibration impact thresholds to determine whether ground-borne vibration would be "excessive." According to the FTA, ground-borne vibration impact criteria for residential receptors are 72 vibration decibels (VdB) for frequent events, 75 VdB for occasional events, and 80 VdB for infrequent events. With regard to ground-borne vibration impacts on structures, the FTA states ground-borne vibration levels in excess of 100 VdB would damage fragile buildings (FTA 2018).

Table 4.12-2 Substantial Increases in Operational Roadway Noise Exposure

Existing Noise Exposure (dBA Ldn or L_{eq})	Project Noise Exposure Before Moderate Impact (dBA Ldn or L_{eq})	Combined Total Noise Exposure (dBA Ldn or L_{eq})	Substantial Noise Exposure Increase (dBA Ldn or L_{eq})
45-49	51	52	7
50-54	53	55	5
55-59	55	58	3
60-64	57	62	2
65-69	60	66	1
70-74	64	71	1
75+	65	75	0

Source: FTA 2018

b. State

California Government Code Section 65302 encourages each local government entity to implement a noise element as part of its general plan. The Governor's Office of Planning Research (OPR) has developed guidelines for preparing noise elements that include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure, similar to those established by the County of Fresno (OPR 2017).

c. Local

Fresno County General Plan

The General Plan Noise and Safety Element identifies normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for a variety of land use and development types (Fresno County 2000). These conditions are based on OPR General Plan Guidelines. Table 4.12-3 shows the County of Fresno community noise exposure levels.

Table 4.12-3 Land Use Compatibility for Community Noise Environments (Ldn or CNEL, dB; Outdoor Exposure)

Land Use Category	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density Single-family, Duplex, Mobile Homes	50-60	55-65	65-75	75-85
Residential – Multiple Family	50-60	55-65	65-75	75-85
Transient Lodging – Motels, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	55-65	65-75	75-85
Auditoriums, Concert Halls, Amphitheaters	–	50-70	–	65-85
Sports Arena, Outdoor Spectator Sports	–	50-75	–	70-85
Playgrounds, Neighborhood Parks	50-70	–	67.5-75	72.5-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	70-77.5	–	80-85
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5	75-85	–
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80	75-85	–

Source: Fresno County 2000

The General Plan Noise and Safety Element includes policies designed to meet General Plan Goal HS-G, to "protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels." These policies address requirements for new noise-sensitive land uses, development in areas that may be exposed to high levels of noise, construction of new noise-generating uses, procedures for acoustical analysis and environmental review, and regulations for construction activity and the use of heavy construction equipment in accordance with the County's Noise Control Ordinance. Applicable policies from the Noise and Safety Element include:

- **Policy HS-G.1:** The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.
- **Policy HS-G.4:** So that noise mitigation may be considered in the design of new projects, the County shall require an acoustical analysis as part of the environmental review process where:
  a. Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels that are "generally unacceptable" or higher according to Table 4.12-3.
  b. Proposed projects are likely to produce noise levels exceeding the levels shown in the County's Noise Control Ordinance at existing or planned noise-sensitive uses.
- **Policy HS-G.5:** Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis of such measures upon site planning and project design. These measures may include,

but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as soundwalls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the project.

- **Policy HS-G.6:** The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.
- **Policy HS-G.8:** The County shall evaluate the compatibility of proposed projects with existing and future noise levels through a comparison to Table 4.12-3.

Fresno County Noise Ordinance

The County's Code of Ordinances (Chapter 8.40, *Noise Control*) contains the noise measurement criteria, exterior noise thresholds, and noise source exemptions, referred to as the "County's Noise Control Ordinance" in the General Plan. Section 8.40.040 states that it is unlawful for any person to create noise on a property "which causes the exterior noise level when measured at any affected single- or multiple-family residence, school, hospital, church or public library situation [sic] in either the incorporated or unincorporated area to exceed the noise level standards as set forth in the following table" (Table 4.12-4). This table summarizes the five exterior noise level standards for the nearby sensitive receptors. Each standard limits the number of minutes within any given hour during which noise generated on a property may exceed a certain noise level at sensitive receptors. The standards apply within 50 feet of the structure of affected sensitive receptors (Section 8.40.030).

Table 4.12-4 Fresno County Exterior Noise Level Standards, dBA

Category	Cumulative Number of Minutes in any One-Hour Time Period (minutes)	Noise Level Standards (dBA)[1,2,3]	
		Daytime 7:00 a.m. – 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

[1] If the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal the ambient noise level

[2] Each of the noise level standards specified above shall be reduced by five dB(A) for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises

[3] If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a period wherein the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards

Source: Fresno County Code of Ordinances, Chapter 8.40, *Noise Control*

As indicated in Table 4.12-4, it would be unlawful for on-site equipment during the Operation and Maintenance Phase of the proposed Project to generate noise exceeding 50 dBA for 30 or more minutes in any daytime hour.

Exempted activities from the County's Noise Control Ordinance, applicable to the Project include:

- Noise sources associated with construction, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday; or
- Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities.

In addition to the exterior noise standards, the Section 8.40.090 of the Fresno County Municipal Code identifies a noise level limit of 50 dBA for electrical substations when measured 50 feet from an affected residence.

4.12.2 Impact Analysis

4.12.2.1 Methodology and Significance Thresholds

a. Methodology

The analysis of noise impacts considers the effects of both temporary construction-related noise and long-term noise associated with operation of the proposed Project. The analysis also includes a brief qualitative discussion of potential, future decommissioning of the Project.

Construction Noise

Construction noise estimates are based on noise levels reported by the Federal Highway Administration's (FHWA) Highway Construction Noise Handbook (2006), the FTA's Transit Noise and Vibration Impact Assessment (2018), and the University of Washington Construction Industry Noise Exposures (2004). Reference noise levels from those documents were then used to estimate noise levels at sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise), using the FHWA Roadway Construction Noise Model (RCNM).

Noise levels associated with construction-related traffic along area highways and roadways were estimated using the federal Traffic Noise Model (TNM), Version 2.5 (FHWA 2004) (noise modeling data sheets can be viewed in Appendix M2). The model calculations for Project-related impacts are based on traffic data from the Project Traffic Impact Study (TIS) (Peters Engineering Group 2020; Appendix N).

Construction Vibration

Ground-borne vibration estimate levels are based on noise levels reported by the FHWA Highway Construction Noise Handbook (2006) and the FTA Transit Noise and Vibration Impact Assessment (2018). Reference levels from those documents were used to estimate vibration levels at nearby sensitive receptors.

Operational Noise

Long-term operational point sources of noise (including PV solar arrays, transformers, inverters, substations, and the switching station) were calculated using a similar methodology to short-term construction equipment. Operational noise would result in a significant impact if long-term noise from equipment on the Project site would exceed the County's exterior noise level standards (Table 4.12-4), would conflict with applicable General Plan Noise and Safety Element policies, or would conflict with the County's Noise Control Ordinance. For operational traffic-related noise, the same County Noise Control Ordinance thresholds were used to determine whether increases in traffic noise would be unacceptable (Table 4.12-4).

Decommissioning

At the end of the Project's useful life (anticipated at up to 35 years), the Solar Facility and associated infrastructure would be decommissioned in accordance with then-current decommissioning practices. It is not possible to quantitatively evaluate potential noise that might result from Project decommissioning in the future as when decommissioning would occur, and the technology or construction practices be available at that time are uncertain. Therefore, based on current decommissioning practices, as a reasonable-worst case, this analysis assumes noise impacts generated during future decommissioning would be similar to noise impacts generated during the construction phase of the Project.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would have a significant impact if it would result in:

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
b. Generation of excessive groundborne vibration or groundborne noise levels
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels

The Initial Study in Appendix A determined the Project would result in no impact with respect to being located within an airport land use plan or located near a private airstrip, exposing people residing or working in the Project area to excessive noise levels (threshold c). The Project site is not located in any airport noise impact contours and does not involve the construction of residences or office buildings and would therefore not expose residents or workers to excessive noise levels from airport or private airstrip operations. Therefore, Threshold c is not discussed further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for a discussion of this topic. Thresholds a and b are addressed below.

For traffic-related noise, impacts are considered significant if Project-generated traffic would result in exposure of sensitive receptors to an unacceptable increase in noise levels. Construction-related traffic noise would result in a significant impact if noise from the construction traffic noise levels would conflict with the County's Noise Control Ordinance (Table 4.12-4).

4.12.2.2 Project Impacts and Mitigation Measures

Threshold a:	Would the Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

IMPACT N-1 THE PROJECT WOULD NOT RESULT IN THE GENERATION OF A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Short-Term On-Site Noise

Operation of heavy equipment during Solar Facility construction and decommissioning would result in a temporary noise level increase that could disturb nearby sensitive receptors. Noise levels associated with the use of heavy equipment at construction sites can range from approximately 74 to 95 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (FHWA 2006). Solar Facility construction activities would involve the use of a variety of construction equipment throughout various phases of construction; these include transport of personnel and materials to the site, use of heavy machinery in grading and clearing the site, operation of pneumatic post drivers for foundation support post installation and other equipment used during construction of the solar arrays, infrastructure improvements, and related structures. Noise levels from construction equipment would diminish at 6 dBA per doubling of distance (refer to Section 4.12.1.1[a], *Overview of Noise*). Noise-sensitive uses near the Project site include rural residences south of the southern boundary of the Project site, near SR 33. One of these residences is approximately 100 feet from the Project site boundary (defined as the property line plus 50 foot set back), and another is approximately 350 feet from the Project site boundary (Figure 4.12-1).

Table 4.12-5 summarizes the typical noise levels associated with heavy construction equipment proposed to be used in Project construction. All noise levels are associated with proposed phasing, including potential overlapping phasing, as described in Section 2.11.7, *Construction Schedule and Workforce*, and Appendix N, *Traffic Impact Study*, and distance to sensitive receptors south of the Project site. Construction noise associated with the PG&E Improvements are discussed below under the PG&E Improvements subsection, followed by a discussion of the combined Project. This analysis makes a conservative assumption that construction activity would occur along the Project boundary facing the nearest noise-sensitive receptors; however, construction activity would typically occur in the body of the Project site, much farther from receptors.

Table 4.12-5 Typical Construction Noise Levels at Various Distances from Project Construction during Each Construction Phase (dBA)

	Estimated Construction Phase Noise Level (L_{eq}, dBA)	
Phase	**100 Feet**	**350 Feet**
Solar Facility		
Phase 1	92	81
Phase 2	94	83
Phase 3	93	82
Energy Storage System		
Phase 1	89	78
Phase 2	79	68
Phase 3	91	80
Overlapping Phasing: Solar Facility Phase 1 and 2; Energy Storage Phase 1		
Solar Facility Phase 1 and Phase 2 Energy Facility Phase 1	97	86
Overlapping Phasing: Solar Facility Phase 2 and 3; Energy Storage Phase 2 and 3		
Solar Facility Phase 2 and Phase 3 Energy Facility Phase 2 and Phase 3	97	86

See all assumptions regarding equipment modeling and results of RCNM modeling in Appendix M3.

Source: FHWA 2006, Harris 1979

As shown in Table 4.12-5, the highest average noise levels during construction would result from the potential for overlapping phasing. Both of the overlapping phases includes construction of post-driving foundation support posts (similar to steel posts used in highway guardrails) for the solar array modules. At 100 feet from the Project site boundary, construction activity would result in a combined maximum noise level of up to 97 L_{eq} dBA. At 350 feet from the Project site boundary, construction activity would result in a combined noise level of up to 86 L_{eq} dBA. However, these noise levels would only occur when construction activities are occurring near the southwestern-most boundary of the Project site. The majority of construction activity on the 4,089-acre Project site would occur further from noise-sensitive receptors and would therefore result in lower noise levels.

The noise-sensitive receptors that would experience the highest temporary noise levels generated by daytime construction activity would be two rural residences located approximately 100 feet south and 350 feet south of the southern Solar Facility site boundary. Due to their proximity to the Solar Facility, noise levels during construction could be up to 97 L_{eq} dBA at 100 feet and 86 L_{eq} dBA at 350 feet, which would exceed the daytime L_{eq} limit of 50 dBA, based on the Fresno County Exterior Noise Level Standard. However, the County of Fresno Noise Control Ordinance exempts construction activity noise from standard exterior noise exposure limits, if conducted during specific hours. Most construction activities would normally occur between the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday. A limited amount of construction work on the weekends may be required, depending on scheduling, equipment and material delivery schedules, and other logistical considerations. Limited weekend construction work would not occur outside 7:00 a.m. to 5:00 p.m.

as specified in the County of Fresno Noise Control Ordinance. Therefore, daytime impacts to adjacent sensitive receptors during construction of the Solar Facility would be than significant.

The nighttime L_{eq} limit is 45 dBA, based on the Fresno County Exterior Noise Level Standard (see Table 4.12-4). Some low-intensity construction-related activities could occur outside the hours specified in the County's Noise Control Ordinance exemption. However, these activities would typically consist of testing or inspection work that would not require the use of heavy-duty off-road equipment and would not be a substantial source of nighttime noise. Therefore, potential nighttime construction activity would not generate noise levels exceeding existing ambient noise levels in the Project area and would not adversely affect noise-sensitive receptors.

This analysis assumes that Project decommissioning impacts would be similar to Project construction impacts and would be completed in approximately 24 months. Therefore, noise impacts to adjacent sensitive receptors during decommissioning of the Solar Facility would be less than significant.

Short-Term Off-Site Traffic Noise

Construction and decommissioning of the proposed Solar Facility would result in a short-term increase in vehicles trips that would increase ambient noise levels off-site, primarily from commuting construction workers and from haul trucks bringing materials to the Project site. Project-related off-site construction noise impacts for the PG&E Improvements and the combined Project are addressed below. Construction phases are expected to overlap. The highest construction trip counts would occur during overlapping of phases of construction, which includes Phase 1 and 2 of the Solar Facility and Phase 1 of the Energy Storage System[1], and would include approximately 614 passenger vehicle trips, 21 medium-duty truck trips, and 13 heavy truck trips during the PM peak hour between the hours of 3:00 p.m. and 4:00 p.m. (Table 8 in Appendix N, *Traffic Impact Study*). The AM peak hour would include 614 passenger vehicle trips but would not include any truck trips between the hours of 6:00 a.m. and 7:00 a.m., to comply with the County's Noise Control Ordinance (Table 7 in Appendix N, *Traffic Impact Study*).

Sensitive receptors along identified haul routes include the receptors south of the Solar Facility site (100 feet and 350 feet south) adjacent to SR 33, at a distance of approximately 90 feet and 140 feet from the centerline of SR 33. Additionally, there are residences located along James Road at varying distances of approximately 60 feet to 350 feet from the centerline; as well as the unincorporated community of Tranquillity. The unincorporated community of Tranquillity includes several sensitive receptors including, Saint Paul's Catholic Church (approximately 50 feet from the centerline of James Road), Tranquillity High School (approximately 690 feet from the centerline of James Road), Tranquillity Elementary School (approximately 1,400 feet from the centerline of James Road), the Tranquillity Branch Library (approximately 500 feet from the centerline of James Road), and Janetski Field (approximately 670 feet from the centerline of James Road).

Based on the location of these off-site sensitive receptors, traffic noise levels were modeled along three potentially affected roadway segments that would experience the largest traffic noise increases. Table 4.12-6 shows the resulting peak hour noise levels at the most affected off-site sensitive receptors along affected segments of SR 33, West Manning Avenue, and James Road.

[1] Construction of the PG&E Improvements could also overlap with Phase 1 and 2 of the Solar Facility and Phase 1 of the Energy Storage System, resulting in an additional 10 passenger vehicle trips during the AM peak hour and 12 passenger vehicle trips during the PM peak hour. Off-site construction noise impacts for the PG&E Improvements and the combined Project are addressed under PG&E Improvements in this section.

Table 4.12-6 Estimated Noise Associated with Construction Traffic on Study Area Roadways (dBA, L_{eq})

Roadway Segment	Projected Noise Level at Peak Hour (dBA L_{eq})[1]		Project-Related Noise Impacts (dBA L_{eq})
	Existing [1]	Existing + Construction [2]	[2] – [1]
AM Peak Hour			
SFR (SR 33, 90 feet from centerline)	57	59	+2
SFR (SR 33, 140 feet from centerline)	55	56	+1
SFR (James Road, 60 feet from centerline)	58	63	+5
Saint Paul's Catholic Church (James Road, 50 feet from centerline)	59	64	+5
PM Peak Hour			
SFR (SR 33, 90 feet from centerline)	62	62	+0
SFR (SR 33, 140 feet from centerline)	59	60	+1
SFR (James Road, 60 feet from centerline)	58	66	+8
Saint Paul's Catholic Church (James Road, 50 feet from centerline)	59	67	+8

[1]Modeling results are rounded to the nearest whole number

Notes: SFR = single-family residential. Refer to Appendix M2 for full noise model output. Noise levels presented do not account for attenuation provided by existing barriers or future barriers; therefore, actual noise levels at sensitive receptor locations influenced by study area roadways may in many cases be lower than presented herein.

Source: FHWA 2004

As shown in Table 4.12-6, traffic related to Solar Facility construction would increase peak hour traffic noise levels by 0 to 8 dBA L_{eq} at sensitive receptors along SR 33, West Manning Avenue, and James Road. However, construction activities would be temporary and are exempt from Fresno County Exterior Noise Standards when conducted between the hours of 6:00 a.m. and 9:00 p.m., Monday through Friday, and between 7:00 a.m. and 5:00 p.m. on Saturday and Sunday. The nighttime L_{eq} limit is 45 dBA, based on the Fresno County Exterior Noise Level Standard (Table 4.12-4). Some low-intensity construction-related activities could occur outside the hours specified in the County's Noise Control Ordinance exemption. However, these activities would typically consist of testing or inspection work that would not require the use of heavy-duty off-road equipment and would not be a substantial source of nighttime noise. Therefore, temporary traffic noise during construction of the proposed Solar Facility would be less than significant.

This analysis assumes that decommissioning impacts would be similar to construction impacts and would be completed in approximately 24 months. Therefore, Project decommissioning would likewise result in less than significant traffic noise impacts.

Long-Term On-Site Operational Noise

The Solar Facility would operate continuously, seven days a week, adding sources of long-term operational noise to the Project site. Potential stationary noise sources associated with the Solar Facility would include PV solar arrays with associated electrical equipment (such as a transformer or inverter) and substations. The collector lines and the operations and maintenance facility would not involve new noise-generating activities or equipment. The Solar Facility is anticipated to operate for

35 years, at which time it would be repowered through approval of additional discretionary application to the County of Fresno or decommissioned.

PV SOLAR ARRAYS

Acoustic assessments of equipment similar to that proposed on the Project site have been conducted for existing solar projects in Ontario, Canada, and Boulder City, Nevada; and an existing solar facility at Nellis Air Force Base in Las Vegas, Nevada (County of San Luis Obispo 2011a, 2011b). Based on data from these facilities, the noise rating has been estimated for each piece of equipment used during Project operation (Table 4.12-7). It is assumed that PV panels, inverters, and transformers would be spread throughout the solar field; exhaust fans would be located in the proposed substations; and HVAC equipment would be located at the O&M building. Battery storage systems would not generate perceptible noise during operations.

Table 4.12-7 Estimated Noise Rating for Equipment Utilized during Project Operation

Equipment Type	Reference Noise Level (dBA)	Unmitigated Noise Level at Nearest Sensitive Receptor
PV Panel	44	38
500+ kW Inverter (in enclosure)	58	38
Transformer	57	37
Exhaust Fan	71	21
HVAC System	79	31
Combined dBA		**43**

Source: County of San Luis Obispo 2011a, 2011b
kW = kilowatt

The combined (uncontrolled) noise generated from this type of equipment, which would only operate during daytime hours when the Solar Facility generates power, would not exceed 43 dBA at the nearest sensitive receptor (residence) located 100 feet from the Solar Facility site boundary. A combined noise level of 43 dBA at 100 feet would not exceed the County's daytime standard of 50 dBA at 50 feet for a period of at least 30 minutes in any hour refer to Table 4.12-4). Even if the equipment associated with PV arrays operated at night, this noise level also would not exceed the County's nighttime standard of 45 dBA for a period of at least 30 minutes in any hour. Therefore, operational noise impacts resulting from the PV solar arrays would be less than significant.

SUBSTATIONS AND COLLECTOR LINES

Substations usually generate steady noise from the process of power conversion and the operation of transformers and auxiliary equipment needed to cool the transformers, including cooling fans and oil pumps. Operational noise levels of the substation transformers would produce a peak daytime noise level of 89 dBA L_{max} at 6 feet from the source, with a nighttime noise level of 86 dBA L_{max} at a distance of one foot from the source, which, as noted above, is attributed to transformer hum (San Luis Obispo County 2011a). The closest residential receptor to either of the two new substations is approximately 0.5-mile southwest of the southern substation (Figure 2-3 in Section 2, *Project Description*), and would be expected to experience noise levels of approximately 35 dBA L_{eq} from the substations, which would be within the existing ambient noise levels of the Project area. This noise level also would not exceed the County's standards of 50 dBA for a period of at least 30

minutes in any daytime hour and 45 dBA for at least 30 minutes in any nighttime hour. Therefore, operational noise impacts resulting from substations and collector lines would be less than significant.

SITE PERSONNEL AND OTHER OPERATIONAL ACTIVITIES

The Solar Facility would be operational during daytime hours. Table 2-2 in Section 2, *Project Description,* identifies on-site equipment that would be used during operation and maintenance of the Solar Facility. As shown in Table 2-2, there would be a maximum of 31 on-site equipment vehicles operational across the 4,089-acre Project site, including a mixture of ATVs, Kubota tractors, portable generators and water trailers, and pickup trucks.

In addition, the Solar Facility would require some nighttime activities, including occasional deliveries, repairs, maintenance, office and administrative activities, security personnel, and emergency response. However, these intermittent activities would typically be dispersed across the Solar Facility site and would not occur near noise-sensitive receptors. Therefore, they would not generate noise exceeding the County's standards shown in Table 4.12-4 and would not substantially affect existing ambient noise levels measured between 41 and 62 dBA L_{eq} in the Project area. Therefore, these activities would result in a less than significant noise impact at off-site receptors.

Long-Term Off-Site Traffic Noise

The Solar Facility would incrementally increase long-term traffic on regional highways during operation and maintenance. Operation of the proposed Solar Facility would require a workforce of approximately eight permanent staff, and additional workers for on-site maintenance, repairs, replacement, and addition to module washing. On-site staff needs could be up to approximately 48 staff on-site up to four times per year, resulting in approximately 96 daily trips. However, average daily trips associated with operation of the Solar Facility would be approximately 16 trips per day.

There are approximately 25 rural residential noise-sensitive receptors adjacent to SR 33, West Manning Avenue, and James Road, near the Project site. The closest off-site residential receptors to roadways in the Project site vicinity are approximately 60 to 140 feet from the roadway centerlines. Traffic noise levels were estimated along three potentially affected segments of James Road that would experience the largest traffic noise increases. Table 4.12-8 shows the resulting noise levels at the most affected off-site sensitive receptors during module washing, which would occur up to four times per year. Typical daily operational traffic noise increases would therefore be lower than shown in Table 4.12-8 (see Appendix M2 for modeling outputs).

Table 4.12-8 Estimated Noise Associated with Operational Traffic on Study Area Roadways (dBA, L_{eq})

Roadway Segment	Projected Noise Level at Peak Hour (dBA L_{eq})[1]		Project-Related Noise Impacts (dBA L_{eq}) [2] – [1]
	Existing [1]	Existing + Operation [2]	
AM Peak Hour			
SFR (James Road, 60 feet from centerline)	58	60	+2
Saint Paul's Catholic Church (James Road, 50 feet from centerline)	59	61	+2
PM Peak Hour			
SFR (James Road, 60 feet from centerline)	58	60	+2
Saint Paul's Catholic Church (James Road, 50 feet from centerline)	59	61	+2

[1]Modeling results are rounded to the nearest whole number

Notes: SFR = single-family residential. Refer to Appendix M2 for full noise model output. Noise levels presented do not account for attenuation provided by existing barriers or future barriers; therefore, actual noise levels at sensitive receptor locations influenced by study area roadways may in many cases be lower than presented herein.

Source: FHWA 2004

As shown in Table 4.12-8, traffic related to Solar Facility operation would not increase traffic noise levels by more than 2 dBA at sensitive receptors evaluated along James Road. This would not be an audible increase in area roadway noise, especially during normal daily operations, which would result in fewer new vehicle trips and lower roadway noise than shown in Table 4.12-8. In addition, it would not exceed the FTA standards shown in Table 4.12-2 and would not result in a substantial permanent increase in noise. Therefore, long-term operational traffic noise would be less than significant.

PG&E Improvements

Short-Term On-Site Noise

Construction of the PG&E Improvements would occur during Phases I and 2 of the Solar Facility and part of the Energy Storage Facility. Temporary noise impacts associated with construction of the PG&E Improvements may adversely affect nearby residential uses to the southwest. Sensitive receptors closest to the PG&E Improvement area include two single-family residences, approximately 1,400 feet and 1,700 feet from the southeastern corner of the PG&E Improvement area. Table 4.12-9 summarizes the typical noise levels associated with heavy construction equipment that would be used in construction of the PG&E Improvement.

Table 4.12-9 Typical Construction Noise Levels at Various Distances from Project Construction during Each Construction Phase for the PG&E Improvements (dBA)

	Estimated Construction Phase Noise Level (L_{eq}, dBA)	
Phase	**1,400 Feet**	**1,700 Feet**
PG&E Improvements Construction		
Phase 1: Site Preparation	58	57
Phase 2: Electrical System Installation	58	57

[1] Assumed the noise equivalent of a concrete pump truck for the water truck, a concrete mixer truck for the concrete truck, and tractors for the heavy-duty trucks in Phase 2. See all assumptions regarding equipment modeling and results of RCNM modeling in Appendix M3.
Source: FHWA 2006, Harris 1979

These nearby sensitive receptors would experience a temporary noise increase during construction of the proposed PG&E Improvements that could reach 58 dBA L_{eq}. However, construction activities would be exempt from the County's Noise Control Ordinance when activities occur between 6:00 a.m. and 9:00 p.m., Monday through Friday, or between 7:00 a.m. and 5:00 p.m. on Saturday or Sunday. Similar to the Solar Facility, construction activities for PG&E Improvements would normally occur between the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday. A limited amount of construction work on the weekends may be required but would not occur outside 7:00 a.m. to 5:00 p.m. Therefore, noise impacts at adjacent sensitive receptors during construction of the PG&E Improvements would be less than significant.

As discussed under Section 4.12.1.1[a], *Overview of Noise*, noise levels typically attenuate at a rate of 6 dBA per doubling of distance from noise sources. Because of the distance from the PG&E Improvement area to the overall Solar Facility and sensitive receptors, construction of the PG&E Improvements would not increase the estimated noise levels from the Solar Facility and Energy Storage Facility detailed in Table 4.12-5, during overlapping phases. The Solar Facility in conjunction with the PG&E Improvements would not result in a combined significant effect to temporary noise impacts, and no mitigation would be required.

Short-Term Off-Site Traffic Noise

Construction of the proposed PG&E Improvements would generate noise off site, primarily from commuting construction workers and from haul trucks bringing materials to the Project site. The highest number of peak hour construction-related trips would be 12, which would include two heavy truck trips during the p.m. peak hour (Table 10 in Appendix N). This increase in traffic would add to total peak hour traffic by approximately 2 percent, which would result in a traffic noise increase of less than 3 dBA. Therefore, traffic noise during construction of the PG&E Improvements would be less than significant.

The Solar Facility in conjunction with the PG&E Improvements would not result in a combined significant impact related to off-site construction noise because construction activities would be temporary and would be exempt from Fresno County Exterior Noise Standards, and no mitigation would be required.

Long-Term On-Site Operational Noise

As discussed in Section 2, *Project Description*, of this EIR, the PG&E Improvements would operate continuously once fully energized and would remain in operation for the rest of the operational life

of the Solar Facility (assumed to be approximately 35 years). The improvements would expand the existing Tranquillity Switching Station and construction of a new 230 kV transmission line. Operational noise associated with the expansion and transmission line would not involve significant new noise-generating activities or equipment. Therefore, long-term operational noise would be minor and sporadic, and impacts from the PG&E Improvements would be less than significant.

Due to the distance from the PG&E Improvement area to the Solar Facility and sensitive receptors and the attenuation rate of noise, the Solar Facility in conjunction with the PG&E Improvements would not result in a combined significant impact related to off-site operational noise, and no mitigation would be required.

Long-Term Off-Site Traffic Noise

Maintenance (including routine inspections) associated with the PG&E Improvements and repair from equipment damaged by vandalism would result in minimal annual vehicle trips to the site and would not increase average daily roadway noise at any noise-sensitive receptor. Therefore, long-term operational traffic noise impacts would be less than significant.

The Solar Facility in conjunction with the PG&E Improvements would have minimal annual vehicle trips to the site and therefore would not result in a combined significant permanent noise impact. As a result, and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

This impact would be less than significant without mitigation.

Threshold b:	Would the project result in the generation of excessive groundborne vibration or groundborne noise levels?

IMPACT N-2 GROUND-BORNE VIBRATION LEVELS DURING CONSTRUCTION OF THE PROJECT WOULD NOT BE EXCESSIVE OR RESULT IN SUBSTANTIAL DISTURBANCE OF NEARBY RESIDENTS. INCREASED LONG-TERM TRAFFIC ON REGIONAL HIGHWAYS DURING OPERATION OF THE PROJECT WOULD NOT SUBSTANTIALLY INCREASE AMBIENT VIBRATION LEVELS. GROUND-BORNE VIBRATION WOULD BE A LESS THAN SIGNIFICANT IMPACT.

Solar Facility

Construction and Decommissioning Vibration

Construction and decommissioning activity involving bulldozers and loaded trucks could create temporary ground-borne vibration on-site and adjacent to the Solar Facility site. The nearest vibration-sensitive receptors are residences approximately 100 feet and approximately 350 feet south of the Solar Facility site. Table 4.12-10 lists ground-borne vibration levels from this equipment at distances of 100 feet and 350 feet from construction activity.

Table 4.12-10 Vibration Source Levels for Construction Equipment (VdB)

Equipment	Approximate VdB	
	100 Feet	350 Feet
Large Bulldozer	69	53
Loaded Trucks	68	51

Notes: Analysis assumes normal propagation conditions. VdB = vibration decibel.
Source: FTA 2018

As shown in Table 4.12-10, vibration levels from construction equipment would reach an estimated range 69 VdB at 100 feet from the source. This level of ground-borne vibration could be perceptible at the nearest sensitive receptor near the southwestern boundary of the Solar Facility site. However, ground-borne vibration would not exceed the FTA's criterion of 72 VdB at residences. Furthermore, a majority of construction activities would occur at greater distances from receptors, reducing construction-related vibration levels. Additionally, compliance with the County's Noise Control Ordinance would limit vibration-generating activity to between the hours of 6:00 a.m. and 9:00 p.m., Monday through Friday, and between the hours of 7:00 a.m. and 5:00 p.m. on Saturday and Sunday. Therefore, vibration associated with construction or decommissioning would be have a less than significant impact from disturbance of nearby residents.

Table 4.12-11 shows vibration levels at the nearest buildings, in terms of in/sec PPV.

Table 4.12-11 Vibration Levels for Construction Equipment (in/sec PPV)

Equipment	Approximate in/sec PPV at Nearest Receptors	
	100 Feet	350 Feet
Large Bulldozer	0.011	0.002
Loaded Trucks	0.010	0.001

Notes: in/sec = inches per second, PPV = peak particle velocity
Source: FTA 2018, Caltrans 2013

As shown in Table 4.12-11, vibration levels at adjacent structures would reach an estimated 0.011 in/sec PPV during use of large bulldozers, which would not exceed the Caltrans threshold of 0.25 in/sec PPV for intermittent sources of vibration at "historic and some old buildings," or the Caltrans threshold of 0.30 in/sec PPV for intermittent sources of vibration at older residential structures. Therefore, construction-related ground-borne vibration would not damage adjacent structures.

Operational Vibration

Per Section 2.12.4, *Operation Equipment*, of the *Project Description*, the equipment would be limited to on-site maintenance, with small- and medium-sized trucks used as routine maintenance vehicles. As discussed in Section 4.12.1.2(a), *Methodology*, Caltrans' guidance manual (2013) states that perceivable vibration would be limited to heavy truck traffic. Therefore, operational vibration would be less than significant.

PG&E Improvements

Construction activity associated with the PG&E Improvements would create temporary ground-borne vibration on and adjacent to the Project site. As shown in Table 4.12-10 and Table 4.12-11, ground-borne vibration levels would not substantially impact the nearby residences at distances of

100 or 350 feet. Therefore, vibration levels at the nearest residential structures located 1,400 and 1,700 feet from the PG&E Improvements would not be perceivable, and this impact would be less than significant.

Operation of the PG&E Improvements would consist of routine maintenance of the facilities. Maintenance truck trips would be sporadic and would not result in a perceivable increase in vibration at adjacent residences. As discussed in Section 4.12.1.2(a), *Methodology*, Caltrans' guidance manual (2013) states perceivable vibration would be limited to heavy truck traffic. Therefore, long-term operational vibration impacts from PG&E Improvements would be less than significant.

Due to the distance from the Solar Facility and PG&E Improvements, as well as compliance with construction time in the County's Noise Control Ordinance, the Solar Facility in conjunction with the PG&E Improvements would not result in a combined significant effect to temporary or permanent ground-borne vibration impacts, and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

This impact would be less than significant without mitigation.

4.12.2.3 Cumulative Impacts

A description of the cumulative analysis methodology and development scenario, including proposed development in Fresno County is included in Section 3.4, *Cumulative Development*, of this EIR.

Geographic Extent

The geographic extent for the analysis of cumulative stationary noise impacts related to noise is limited to areas within approximately 0.25 mile of the proposed Project, including the PG&E Improvements, and along the employee and haul truck routes in the study area as described in Section 4.13, *Transportation*. These areas are defined as the geographic extent of the cumulative noise impact area because noise impacts are highly localized and sounds naturally attenuate with distance and intervening vegetation such that the level of noise would reduce to below the County's maximum exterior noise level standards (Table 4.12-4) and/or blend in with the background noise. It is possible that noise from different sources within that distance could combine to create a significant cumulative impact to receptors. Portions of three future foreseeable projects, including Heartland 1 and 2 and Sonrisa Solar, and the existing Great Valley Solar Project are located within this distance (refer to Table 3-1, *Cumulative Projects List*, in Section 3.4, *Cumulative Development*).

Cumulative Impact Analysis

Construction and Decommissioning

Portions of three future foreseeable projects have been identified within 0.25 mile of the proposed Project and consist of solar and renewable energy facilities (Heartland 1 and 2 and Sonrisa Solar). Although their construction schedules are unlikely to overlap to due current project timelines, if they did, it could result in cumulatively considerable noise and vibration impacts at nearby sensitive

receptors. However, as described under Impact N-1, construction and decommissioning activities would be temporary and County of Fresno Noise Control Ordinance exempts construction activity noise from standard exterior noise exposure limits, if conducted during specific hours. Because Project construction and decommissioning activities would not occur outside of the hours specified in the County of Fresno Noise Control Ordinance, the Project's contribution to cumulative noise impacts from construction and decommissioning would not be significant. Project-related impacts associated with ground-borne vibration or ground-borne noise would be minor, site-specific, and would not combine with other projects due to their distance from the Project site. Therefore, the Project's contribution to cumulative ground-borne vibration impacts would be less than significant.

Operations

Cumulative operations impact would occur if the Project's operational noise in combination with other cumulative projects within 0.25 mile (including Heartland 1 and 2, Sonrisa Solar, and Great Valley Solar) exceed the County's maximum exterior noise level standards (Table 4.12-4) . As discussed under Impact N-1, operational noise from the on-site activities and traffic would not exceed 50 dBA during daytime or 45 dBA during nighttime at the sensitive receptor 100 feet from the Project site. The adjacent solar and renewable energy facilities would have similar operational noise impacts as the proposed Project and most operational noise at these facilities would be greater than 0.25 mile from the Project site and would dissipate such that the level of noise would not exceed the County's maximum exterior noise level standards (Table 4.12-4) and/or blend in with the background noise. The other cumulative projects in the regional vicinity of the Project site would utilize some of the same access roads throughout the Project vicinity. However, the dispersed nature of these projects and the fact that most shared access roadways would be higher-volume freeways and arterials would prevent employee and haul truck noise from individual construction projects from combining to cause a substantial cumulative increase in roadway noise. Therefore, operational cumulative noise impacts would be less than significant.

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4.13 Transportation

This section describes existing traffic conditions in the vicinity of the Project site, and evaluates the significance of potential impacts related to transportation and traffic. The analysis presented in this section is based partially on the Traffic Impact Study prepared for the Project contained in Appendix N.

In June 2016, Section 15064.3 was added to the State California Environmental Quality Act (CEQA) Guidelines requiring transportation impact analysis be based on Vehicle Miles Traveled (VMT), instead of a congestion metric (such as level of service [LOS] or traffic index [TI]). Additionally, a project's effect on automobile delay no longer constitutes a significant environmental impact, as previously required. Therefore, as required by CEQA, the impact analysis in this section is based on VMT. Please refer to the Traffic Impact Study in Appendix N for the LOS analysis for the project and Section 4.11, Land Use, for a discussion of project consistency with County General Plan policies related to LOS.

4.13.1 Setting

4.13.1.1 Environmental Setting

The Project site is located in unincorporated Fresno County, on the east side of State Route (SR) 33, approximately 6.5 miles east of Interstate 5 (I-5). Access to the Project site is provided by the roadway network described below.

a. Major Highways

SR 33 (Derrick Avenue) is an undivided state highway that extends north/south through the Central Valley, generally running parallel to I-5. Where SR 33 runs adjacent to the Project site, it has two 12-foot wide travel lanes and gravel shoulders. SR 33 provides the most direct regional access to the Project site. SR 180 (Whitesbridge Avenue) is located 7.8 miles north of the Project site and extends east/west from Mendota to Kings Canyon National Park.

b. Local Roads

The primary access to the portion of the Solar Facility south of Manning Avenue would be provided from Manning Avenue at Monterey Avenue, and the primary access point to the portion of the Solar Facility north of Manning Avenue would be provided from Manning Avenue at the San Benito Avenue alignment. These local roads primarily carry agricultural-related traffic. The PG&E Improvements would be accessed for construction work via Ohio Avenue or Dinuba Avenue.

4.13.1.2 Regulatory Setting

a. State

California Department of Transportation

Caltrans has jurisdiction over state highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways. Fresno County is under the jurisdiction of Caltrans District 6. The following Caltrans regulations apply to the Project:

- **California Vehicle Code, 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.

Senate Bill (SB) 743

Adopted in 2013, Senate Bill (SB) 743 required the Governor's Office of Planning and Research (OPR) to develop new CEQA guidelines that address transportation impact metrics under CEQA. Section 15064.3 was added to the State CEQA Guidelines requiring transportation impact analysis be based on VMT, instead of a congestion metric (such as LOS) and stating that a project's effect on automobile delay shall not constitute a significant environmental impact, as previously required. In December 2018, OPR published a *Technical Advisory on Evaluating Transportation Impacts*, including guidance for VMT analysis (OPR 2018). The Office of Administrative Law approved the updated CEQA Guidelines and lead agencies were given until July 1, 2020 to implement the updated guidelines for VMT analysis.

b. Local

Fresno County General Plan

The Transportation and Circulation Element of the County General Plan provides the framework for Fresno County decisions concerning the county-wide transportation system, which includes various transportation modes and related facilities. It also provides for coordination with the cities and unincorporated communities within the County, with the Regional Transportation Plan adopted by the Council of Fresno County Governments (COG), and with federal and state agencies that fund and manage transportation facilities in the county. This element of the General Plan sets out goals, policies, and programs related to transportation and circulation. The following transportation-related policies are applicable to the Project:

- **Policy TR-A.3.** The County shall require that new or modified access to property abutting a roadway and to intersecting roads conform to access specifications in the Circulation Diagram and Standards section. Exceptions to the access standards may be permitted in the manner and form prescribed in the Fresno County Zoning and Subdivision Ordinances, provided that the designed safety and operational characteristics of the existing and planned roadway facility will not be substantially diminished.
- **Policy TR-A.5.** The County shall require dedication of right-of-way or dedication and construction of planned road facilities as a condition of land development, and require an analysis of impacts of traffic from all land development projects including impacts from truck traffic. Each such project shall construct or fund improvements necessary to mitigate the effects of traffic from the project. The County may allow a project to fund a fair share of improvements that provide significant benefit to others through traffic impact fees.
- **Policy TR-A.8.** The County shall ensure that land development that affects roadway use or operation or requires roadway access to plan, dedicate, and construct required improvements consistent with the criteria in the Circulation Diagram and Standards section of this element.

Fresno County Solar Facility Guidelines

Fresno County adopted Solar Facility Guidelines due to the need to accommodate new renewable energy technology and the need to protect important farmlands and to minimize the impacts to agricultural operations. Solar facilities should include information in the application per the Guidelines. Item 13 in the Guidelines required projects, in addition to disclosing the number of trips, the applicant shall disclose the weight of the shipments anticipated to the site. If the project is approved, pursuant to the CEQA analysis and based upon the existing road conditions and the weight/frequency of shipments to the site, the applicant shall mitigate impacts to County roads.

Fresno Council of Governments Regional Transportation Plan/Sustainable Communities Strategy

The latest Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was prepared by the Fresno Council of Governments (FCOG) and adopted in December 2018 (Fresno COG 2018). The RTP/SCS is a blueprint that establishes a set of regional transportation goals, policies, and actions to guide development of the planned, multimodal transportation systems in Fresno County. It was developed through a continuing, comprehensive, and cooperative planning process, and provides for effective coordination between federal, state, regional, and local agencies. Additionally, it establishes a basis on which funding applications are evaluated. Use of any federal or state transportation funds by local governments must conform to the RTP, the State Implementation Plan for air quality improvements, and the Federal Transportation Improvement Programs (FTIP).

4.13.2 Impact Analysis

4.13.2.1 Methodology and Significance Thresholds

a. Methodology

The analysis is informed in part by the Project-specific traffic report prepared in November 2018 by Peters Engineering Group (Peters Engineering Group 2020; Appendix N). The preparers of this Draft EIR independently reviewed the traffic report and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance upon (in combination with other materials included in the formal record) in the preparation of this Draft EIR.

Vehicle Miles Traveled

In December 2018, the Governor's Office of Planning and Research (OPR) released a technical advisory titled *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR guidelines), which contains recommendations regarding the assessment of vehicle miles travelled (VMT) and thresholds of significance. As noted in the OPR guidelines, lead agencies are directed to choose metrics and thresholds that are appropriate for their jurisdiction to evaluate the potential impacts of a project. The change to VMT was formally adopted as part of updates to the CEQA Guidelines on December 28, 2018. The current deadline for adopting policies to implement SB 743 and the provisions of CEQA Guidelines section 15064.3(b) is July 1, 2020. The County of Fresno has not yet adopted VMT policies; therefore, the potential VMT impacts from implementation of the Project were evaluated based on guidance and screening criteria presented in the OPR guidelines.

The OPR guidelines indicate that projects that generate or attract fewer than 110 trips per day generally may be presumed to cause a less-than-significant transportation impact. Section

15064.3(a) of the State CEQA Guidelines define VMT as the "amount and distance of automobile travel attributable to a project." The OPR guidelines further state, "Here, the term 'automobile' refers to on-road passenger vehicles, specifically cars and light trucks." Therefore, truck trips are generally excluded from the requirements of CEQA as they pertain to transportation impacts and VMT. Furthermore, the OPR guidelines focus almost exclusively on permanent residential, office, and retail projects as primarily responsible for increasing VMT in the state. Therefore, for the purpose of this analysis, the Project would potentially conflict or be inconsistent with State CEQA Guidelines section 15064.3(b), and potentially result in a significant impact, if it would generate more than 110 permanent trips per day.

b. Significance Thresholds

Based on the State CEQA Guidelines, the Project would have a significant impact if it would:

a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;
b. Conflict or be inconsistent with State CEQA Guidelines section 15064.3, subdivision (b);
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment); and/or
d. Result in inadequate emergency access.

The Initial Study in Appendix A determined that the Project would not result in significant impacts with respect to public transit, bicycle, or pedestrian facilities (threshold a). Refer to Section 4.15, *Issues Addressed in the Initial Study*, for a discussion of these impacts. Section 4.11, Land Use, discusses Project consistency with policies related to roadways. These issues are not discussed further in this section.

4.13.2.2 Project Impacts and Mitigation Measures

Threshold b:	Conflict or be inconsistent with State CEQA Guidelines section 15064.3, subdivision (b)

Impact T-1 THE PROJECT WOULD NOT RESULT IN A SUBSTANTIAL INCREASE IN VEHICLE MILES TRAVELED (VMT) THAT WOULD CONFLICT OR BE INCONSISTENT WITH STATE CEQA GUIDELINES SECTION 15064.3(B). IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility and PG&E Improvements

Project construction and decommissioning would result in a temporary increase in VMT from employee and truck trips during the up to 18-month construction period and 24-month decommissioning period. As discussed in Section 4.13.2.1, the State CEQA Guidelines state that VMT refers to the amount and distance of automobile travel attributable to a project. The OPR guidelines further state, "Here, the term 'automobile' refers to on-road passenger vehicles, specifically cars and light trucks." Therefore, truck trips typical of those that would be generated by Project construction and decommissioning are generally excluded from the requirements of CEQA as they pertain to transportation impacts and VMT (Peters Engineering 2020; Appendix N).

Based on Section 2.11.7, *Construction Schedule and Workforce*, of the *Project Description*, the total number of construction workers at any given time during Project construction and decommissioning would range between 132 and 974 with an average round-trip commute of 100 miles (Recurrent

Energy 2018; Appendix N). Therefore, Project construction and decommissioning would generate between 132,000 and 974,000 VMT per day during the construction and decommissioning periods.

This VMT would be temporary, would cease upon completion of construction and decommissioning, and would not contribute to permanent per-capita VMT. Therefore, Project construction and decommissioning would not result in a substantial increase in VMT that would conflict or be inconsistent with State CEQA Guidelines Section 15074.3(b) and impacts would be less than significant.

Operation of the proposed Solar Facility would require a workforce of approximately eight permanent staff. The PG&E Improvements would require no additional staff. Based on the screening criteria of 110 trips per day discussed in Section 4.13.2.1, operation of the Solar Facility would not result in a substantial increase in VMT that would conflict or be inconsistent with State CEQA Guidelines Section 15074.3(b) and impacts would be less than significant.

Mitigation Measure

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold c:	Whether the Project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)

Impact T-2 THE PROJECT WOULD NOT SUBSTANTIALLY INCREASE TRAFFIC HAZARDS DUE TO A GEOMETRIC DESIGN FEATURE OR INCOMPATIBLE USES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The use of oversized vehicles during construction and decommissioning of a project has the potential to increase hazards to traffic conditions by limiting motorist views on roadways. Construction and decommissioning of the Solar Facility would require the delivery of heavy construction equipment and facility materials, some of which may need to be transported by oversized vehicles. However, construction-related oversized vehicle loads must comply with permit-related and other requirements of the California Vehicle Code and California Streets and Highway Code. California Highway Patrol escorts may be required at the discretion of Caltrans and Fresno County, and would be detailed in respective oversized load permits. In addition, because area roads are in a rural part of the County with reduced population density and traffic compared to more urban environments, Solar Facility construction-related oversized vehicles are not anticipated to result in a substantial roadway hazards traveling to and from the Project site. Furthermore, the Solar Facility would not include a design feature or utilize vehicles with incompatible uses that would create a hazard on the roadways surrounding the Project site.

Access to the Solar Facility site during construction, operation and maintenance, and decommissioning would be provided from Manning Avenue at Monterey Avenue and at the San Benito Avenue alignment (Figure 2-3, *Site Plan*). No driveways onto SR 33 are proposed. Design and construction of Solar Facility access road intersections would be required to conform with Fresno County standards (per General Plan Policies TR-A.3, TR-A.5, and TR-A.8). Among the applicable

requirements are corner sight distance (though the flat terrain is assumed to alleviate concerns with sight distance) and dedication of right-of-way along SR 33 to accommodate Caltrans' plans to widen the right-of-way, per SR 33 Caltrans Transportation Concept Report (Caltrans 2017b). Impacts associated with hazards resulting from a Project geometric design feature would be less than significant.

PG&E Improvements

Construction of the PG&E Improvements would require the delivery of heavy construction equipment and facility materials. The Improvements would comply with requirements of the California Vehicle Code and California Streets and Highway Code. Due to the rural nature of the area, oversized vehicles are not anticipated to result in a substantial roadway hazards traveling to and from the Project site. Operation of the PG&E Improvements would use existing driveways and not increase hazards. Therefore, traffic hazards associated with PG&E Improvements would be less than significant. Additionally, construction and operation of the Solar Facility in conjunction with the PG&E Improvements would not result in significant impacts related to traffic hazards.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold d:	Whether the Project would result in inadequate emergency access

Impact T-3 THE PROJECT WOULD NOT RESULT IN INADEQUATE EMERGENCY ACCESS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The Solar Facility would be located in a rural area with multiple access roads allowing adequate egress/ingress to the Project site in the event of an emergency. The Solar Facility would include internal access roadway improvements. Therefore, the Solar Facility would allow for adequate emergency access.

The Solar Facility would not require closures of public roads, which could inhibit access by emergency vehicles. During construction and decommissioning of the Solar Facility, heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures if an emergency occurs (e.g., slowing vehicles traveling behind the truck). However, given that no businesses or emergency response stations and only a limited number of residences exist in the immediate vicinity of the Project site, it is not likely that heavy construction-related traffic would result in inadequate emergency access.

PG&E Improvements

Similar to the Solar Facility, the PG&E Improvements would be located in a rural area with multiple access roads allowing adequate egress/ingress to the Project site in the event of an emergency. Heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures if an emergency occurs. However, given that no businesses or

emergency response stations and only a limited number of residences exist in the immediate vicinity of the Project site, it is not likely that heavy construction-related traffic would result in inadequate emergency access during construction of the PG&E Improvements. Therefore, emergency access impacts associated with PG&E Improvements would be less than significant.

Additionally, construction and operation of the Solar Facility in conjunction with the PG&E Improvements would not result in significant impacts related to emergency access.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.13.2.3 Cumulative Impacts

Cumulative increases in VMT as a result of construction of past, present, and reasonably foreseeable future actions making up the cumulative scenario would not be permanent and would not result in a cumulative traffic impact. Based on technical guidance from the Governor's Office of Planning and Research, if a project has a less than significant impact on VMT using an efficiency-based threshold (e.g. VMT per resident), project operation would not contribute to a cumulative VMT impact (OPR, 2018). As discussed in Impact T-1, the Project's operational VMT impact would be less than significant based on the OPR guidelines screening criteria. The screening criteria is analogous to an efficiency-based threshold and the Project's contribution to cumulative VMT impacts would be less than significant. Therefore, the Project would not contribute to a cumulative impact related to transportation or traffic.

Potential impacts associated with emergency access and transportation hazards would be site-specific and would not have corresponding cumulative effects. Therefore, the Project would not contribute to a cumulative impact related to emergency access and transportation hazards.

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4.14 Utilities and Service Systems

This section identifies and evaluates issues related to utilities and service systems in the context of the Project. The discussion includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, and the results of the impact analysis. The analysis presented in this section is based in part on the information contained in the following Project-specific reports:

- Phase C Hydrology Study for RE Scarlet Solar Project, Fresno County (Westwood Professional Services [Westwood] 2017) contained in Appendix K1
- RE Scarlet Solar Energy Project Hydrology Study Supplement (Rincon 2018a) contained in Appendix K2
- Water Supply Assessment for RE Scarlet Energy Project (Rincon 2018b) contained in Appendix K3

4.14.1 Setting

4.14.1.1 Environmental Setting

a. Water

Water for the Project would be obtained from the Westlands Water District (WWD), the City of Fresno, and the City of Mendota. WWD provides water to users in western Fresno and Kings counties, including the area surrounding the Project site. The Central Valley Project, via the Sacramento-San Joaquin Delta, and the Delta-Mendota Canal to San Luis Reservoir deliver most of WWD's water. WWD also pumps groundwater from wells enrolled in the Groundwater Management Program in the Westside Subbasin of the San Joaquin Valley Groundwater Basin. Farmers pump approximately one-third of all groundwater pumped in WWD's service area via privately owned and operated wells (WWD 2018a, 2018b). WWD supplies water for agricultural use and does not deliver treated water for human consumption (Appendix K3).

The City of Fresno currently relies on a combination of groundwater and surface water supplies (from the Central Valley Project) to meet water demands in its service area. Its groundwater comes from the Kings Subbasin of the San Joaquin Groundwater Basin, which extends across Fresno, Kings, and Tulare counties. This subbasin encompasses a surface area of approximately 976,000 acres (1,530 square miles) in the San Joaquin Valley.

The City of Mendota's water comes from wells that draw from the Delta-Mendota Subbasin of the San Joaquin Valley Groundwater Basin. The Delta-Mendota Subbasin extends across Stanislaus, Merced, Madera, and Fresno counties, and encompasses approximately 747,000 acres (1,170 square miles) in the San Joaquin Valley.

Some of the Project site has been irrigated intermittently for the past 10 years (Appendix K3). All of the parcels in the Project footprint are part of Westlands Water District settlements that require a non-irrigation covenant upon transfer of ownership. Refer to 2.6.1, *Existing Land Use*, in Section 2, *Project Description*.

b. Wastewater

No existing municipal sewage or wastewater disposal system serves the Project site. In the area, wastewater is disposed to on-site septic systems.

c. Stormwater

The Project site is flat and un-channelized (Appendix K1). On-site water conveyance infrastructure consists of a system of remnant irrigation basins and ditches constructed originally to supply irrigation water to agricultural fields. No other drainage facilities are on site.

d. Solid Waste

The County of Fresno Resources Division is responsible for solid waste coordination and disposal activities; it has a number of facilities that could accept solid waste from the Project site. The American Avenue Disposal Site is the County's regional landfill located near the city of San Joaquin, approximately 12 miles northeast of the Project site. This facility is able to accept all types of solid waste and recycling, including household hazardous wastes.

The American Avenue Landfill is permitted to receive 2,200 tons of waste per day. It has a remaining capacity of approximately 29,358,535 cubic yards and is expected to reach its permitted capacity in 2031 (California Department of Resources, Recycling, and Recovery [CalRecycle] 2018a). The next nearest landfills to the Project site are the City of Clovis Landfill and the Billy Wright Disposal Site. The City of Clovis Landfill, approximately 40 miles northeast of the Project site, is permitted to receive 2,000 tons of waste per day; it has a remaining capacity of approximately 7,740,000 cubic yards and is expected to reach its permitted capacity in 2047 (CalRecycle 2018b). The Billy Wright Disposal Site, approximately 40 miles northwest of the Project site, is permitted to receive 1,500 tons of waste per day; it has a remaining capacity of approximately 14,800,000 cubic yards and is expected to reach its permitted capacity in 2054 (CalRecycle 2018c).

The Clean Harbors Buttonwillow Landfill is the nearest landfill accepting hazardous waste. It is approximately 100 miles south of the project site and is permitted to receive 10,500 tons of waste per day. It has a maximum capacity of approximately 14,800,000 cubic yards and is expected to reach its permitted capacity in 2040 (CalRecycle 2019).

4.14.1.2 Regulatory Setting

a. Federal

No federal statutes, regulations, plans, or policies govern utilities and service systems on the Project site.

b. State

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (Assembly Bill [AB] 939, Public Resource Code Section 40000 et seq.) was enacted to reduce, recycle, and reuse solid waste generated in the state to the maximum extent feasible. Specifically, AB 939 required local governments to identify an implementation schedule to divert 50 percent of the total waste stream from landfill disposal by 2000. AB 939 also requires local governments to promote source reduction, recycling, and safe disposal or transformation. Counties and cities must also maintain the 50 percent diversion specified by AB 939 beyond 2000.

In 2011, AB 341 amended AB 939 to implement the state policy that no less than 75 percent of solid waste generated be reduced, recycled, or composted by the year 2020, and maintained annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and

Recovery (CalRecycle) to develop strategies to achieve the state's policy goal. CalRecycle recommends strategies that address the 75 percent goal and that serve other critical objectives: protecting public health and safety, reducing GHG, expanding manufacturing infrastructure and bringing green jobs to California, reducing reliance on unstable export markets, reducing local government costs for hard-to-manage wastes, and increasing production of renewable energy and fuel.

California Code of Regulations, Title 22

Title 22 of the California Code of Regulations (Cal. Code Regs.), also known as the CALGreen, outlines an array of requirements with respect to the disposal and recycling of hazardous and universal wastes. Specific standards and requirements are included for the identification, collection, transport, disposal, and recycling of hazardous wastes. Additional standards are applied to collection, transport, disposal, and recycling of universal wastes, identified in Section 66273.9 of Title 22, including batteries, electronic devices, mercury-containing equipment, lamps, cathode ray tubes, and aerosol cans. Requirements are detailed for recycling, recovery, returning spent items to the manufacturer, or disposal at an appropriately permitted facility. Division 4.5 of Title 22 also indicates restrictions and standards relevant to waste destination facilities, and provides authorization requirements for various waste handlers. Title 22 includes California's Universal Waste Rule and other waste handling and disposal requirements.

Utility Notification Requirements

California Government Code Section 4216 et seq. requires owners and operators of underground utilities to become members of, participate in, and share the costs of a regional notification center for excavation projects. Underground Service Alert North (USA North) is the notification center for the Project site. It receives planned excavation reports and transmits the information from these reports to all participating members with underground facilities at the location of excavation. The USA North members mark or stake their facilities, provide information, or give clearance to dig following the notifications (USA North 2018).

Water Supply Assessment and Verification

California Water Code Section 10910 requires a county to identify any water system whose service area includes a given project site and any water system adjacent to the project site that is, or may become a "public water system" that may supply water for the project. Water Code Section 10912(c) defines "public water system" as "a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections." If a county is not able to identify any public water system that may supply water for a particular project, then it is obligated to prepare a water supply assessment (WSA). Appendix K3 of this report provides the WSA for the Project.

Septic System Requirements of the California Plumbing Code

Cal. Code Regs. Title 24, Part 5 regulates plumbing systems. Based on the American National Standard 2015 Uniform Plumbing Code, the California Plumbing Code attempts to minimize public risk by specifying technical standards for design, materials, workmanship, and maintenance for plumbing systems, including septic systems.

c. Local

Fresno County General Plan

The Fresno County General Plan Public Facilities and Services Element (Fresno County 2000) contains the following policies relevant to the Project for utilities and service systems:

- **Policy PF-A.1**: The County shall ensure through the development review process that public facilities and services will be developed, operational, and available to serve new development. The County shall not approve new development where existing facilities are inadequate unless the applicant can demonstrate that all necessary public facilities will be installed or adequately financed and maintained (through fees or other means).
- **Policy PF-C.3:** To reduce demand on the County's groundwater resources, the County shall encourage the use of surface water to the maximum extent feasible.
- **Policy PF-C.12:** The County shall approve new development only if an adequate sustainable water supply to serve such development is demonstrated.
- **Policy PF-C.17:** The County shall, prior to consideration of any discretionary project related to land use, undertake a water supply evaluation. The evaluation shall include the following:
    a. A determination that the water supply is adequate to meet the highest demand that could be permitted on the lands in question. If surface water is proposed, it must come from a reliable source and the supply must be made "firm" by water banking or other suitable arrangement. If groundwater is proposed, a hydrogeologic investigation may be required to confirm the availability of water in amounts necessary to meet project demand. If the lands in question lie in an area of limited groundwater, a hydrogeologic investigation shall be required.
    b. A determination of the impact that use of the proposed water supply will have on other water users in Fresno County. If use of surface water is proposed, its use must not have a significant negative impact on agriculture or other water users within Fresno County. If use of groundwater is proposed, a hydrogeologic investigation may be required. If the lands in question lie in an area of limited groundwater, a hydrogeologic investigation shall be required. Should the investigation determine that significant pumping-related physical impacts will extend beyond the boundary of the property in question, those impacts shall be mitigated.
    c. A determination that the proposed water supply is sustainable or that there is an acceptable plan to achieve sustainability. The plan must be structured such that it is economically, environmentally, and technically feasible. In addition, its implementation must occur prior to long-term and/or irreversible physical impacts, or significant economic hardship, to surrounding water users.
- **Policy PF-C.25:** The County shall require that all new development within the County use water conservation technologies, methods, and practices as established by the County.
- **Policy PF-D.6:** The County shall permit individual on-site sewage disposal systems on parcels that have the area, soils, and other characteristics that permit installation of such disposal facilities without threatening surface or groundwater quality or posing any other health hazards and where community sewer service is not available and cannot be provided.
- **Policy PF-E.6**: The County shall require that drainage facilities be installed concurrently with and as a condition of development activity to ensure the protection of the new improvements as well as existing development that might exist within the watershed.

- **Policy PF-E.11:** The County shall encourage project designs that minimize drainage concentrations and maintain, to the extent feasible, natural site drainage patterns.
- **Policy PF-E.14:** The County shall encourage the use of retention-recharge basins for the conservation of water and the recharging of the groundwater supply.
- **Policy PF-F.1:** The County shall continue to promote maximum use of solid waste source reduction, reuse, recycling, composting, and environmentally-safe transformation of wastes.
- **Policy PF-F.4:** The County shall ensure that all new development complies with applicable provisions of the County Integrated Waste Management Plan.
- **Policy PF-J.3:** The County shall require all new residential development along with new urban commercial and industrial development to underground utility lines on site.

Fresno County Solar Facility Guidelines

The Fresno County Solar Guidelines require an Environmental Impact Report (EIR) to address the following issues related to utilities and service systems:

> 2. Information shall be submitted that identifies the source of water for the subject parcel (surface water from irrigation district, individual well[s], conjunctive system). If the source of water is via district delivery, the applicant shall submit information documenting the allocations received from the irrigation district and the actual disposition of the water (i.e., utilized on site or moved to other locations) for the last 10 years. If an individual well system is used, provide production capacity of each well, water quality data and data regarding the existing water table depth (Fresno County 2017a).

A WSA (Appendix K3) was prepared to identify sources of water for the Project pursuant to the requirements of the Fresno County Solar Facility Guidelines.

Fresno County Construction and Demolition Debris Recycling Program

The Fresno County Construction and Demolition (C&D) Debris Recycling Program is intended to assist the County in its efforts to comply with AB 939 and to provide builders with a way to document waste reduction requirements stipulated in the CALGreen standards (24 Cal. Code Regs. Part 11). The C&D Debris Recycling Program would require the applicant to submit a Waste Management Plan and generate a waste log during construction and demolition (Fresno County 2017b).

Fresno County Code of Ordinances Section 15

Fresno County Ordinance Title 15 regulates the installation of individual septic systems in the unincorporated areas of the county. The ordinance adopts the provisions of the Uniform Plumbing Code for septic systems. Applicants for septic system permits also must comply with the United States Public Health Service Manual of Septic Tank Practice and the Local Area Management Plan (LAMP) codified in Chapter 15.20 of the Fresno County General Ordinance Code. These requirements are intended to preclude the creation of health hazards and nuisance conditions and to protect surface and groundwater quality. The County of Fresno County Public Works and Planning Department regulates septic systems in unincorporated areas of the county; Fresno County Building and Safety Services also reviews sewage disposal systems.

Fresno County Code of Ordinances Section 17.64

Section 17.64 of the Fresno County Code of Ordinances (Drainage of Land) provides Fresno County the authority to impose conditions on development related to drainage. Agricultural uses are subject to certain exemptions, but developments not in an area subject to a local drainage fee, including the Project, must provide drainage facilities and improvements on site, as necessary, to ensure the safe disposal of surface and stormwater. Section 3.11, *Hydrology and Water Quality*, details provisions related to stormwater quality and management.

1966 Fresno County Improvement Standards

The 1966 Fresno County Improvement Standards outline how projects outside of the Fresno Metropolitan Flood Control District are to manage hydrologic impacts, either through retention or by discharging to existing drainage facilities.

4.14.2 Impact Analysis

4.14.2.1 Methodology and Significance Thresholds

a. Methodology

Potential effects are assessed with respect to utilities and service systems based, in part, on findings in the Phase C Hydrology Study and the Hydrology Study Supplement prepared for the Project, included as Appendix K1 and Appendix K2 respectively. A WSA (Appendix K3) was prepared to evaluate the sufficiency of available water supplies to meet Project water demands.

b. Significance Thresholds

Based on the CEQA Guidelines, the Project would have a significant impact if it would:

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects;
b. Not have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years;
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals;
e. Not comply with federal, state, and local management and reduction statutes and regulations related to solid waste;

The Initial Study in Appendix A determined the Project would not result in significant impacts related to inadequate capacity of a wastewater treatment provider (threshold c). Therefore, this issue is addressed no further in this section. Refer to Section 4.15, *Issues Addressed in the Initial Study*, for a discussion of this issue.

4.14.2.2 Project Impacts and Mitigation Measures

Threshold a:	Whether the project would require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects

Impact USS-1 THE PROJECT INCLUDES THE CONSTRUCTION OF A NEW ON-SITE SEPTIC TANK AND LEACH FIELD AND STORMWATER DRAINAGE, ELECTRIC POWER, AND TELECOMMUNICATIONS FACILITIES, THE ENVIRONMENTAL EFFECTS OF WHICH ARE ANALYZED THROUGHOUT THIS EIR. THESE FACILITIES WOULD BE ADEQUATE TO SERVE THE PROJECT SITE, AND NO ADDITIONAL OR EXPANDED FACILITIES WOULD BE REQUIRED. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Water

As described in Section 2, *Project Description*, the Solar Facility would require non-potable water for dust suppression during construction and decommissioning, which would be obtained from an existing private well on the Great Valley Solar Project site and/or purchased from WWD and trucked to the site from an existing well. This water would be stored in new portable aboveground tanks that would be removed at the completion of construction. During construction and decommissioning, potable water for drinking and hand washing would be provided by a bottled water service provider.

During operation and maintenance of the Solar Facility, non-potable water would be required for PV solar panel washing, maintenance activities, and the operations and maintenance building restroom facilities. Since up to eight persons may be on site full time and an additional forty persons may be on site for panel washing, bottled water would be procured by operations and maintenance staff and stored on site for consumption. Non-potable operations water would be trucked in from the Fresno or Mendota.

No new water facilities, including wells or other infrastructure, would be constructed as part of the Project. Because the Solar Facility would not require the construction of new water facilities, it would not cause significant environmental effects associated with the provision of such facilities. This impact would be less than significant.

Wastewater

During construction and decommissioning (including site restoration), portable restroom facilities would be provided for on-site personnel by a licensed provider. These facilities would not affect the operation or function of wastewater treatment facilities.

During operation, a septic system and leach field may be installed adjacent to the O&M building to support the restroom facilities and sewage generated by the eight permanent staff members. As described in Section 2.9.5.2, *Septic System and Leach Field*, the septic system would have a 1,000-gallon septic tank and would discharge effluent to approximately 420 feet of disposal trench comprising seven 60-foot-long trenches. The septic system design would adhere to the California Plumbing Code and the Fresno Local Area Management Plan and would be reviewed and approved by the Fresno County Building and Safety Services prior to construction. These design measures and oversight would ensure the septic system is appropriately sized, meets applicable standards, and

would not leach into groundwater. The environmental impacts of the septic system and leach field are analyzed in relevant sections throughout the EIR, including Section 4.7, *Geology and Soils*.

Because an on-site septic system and leach field would be sufficient to serve operations, the Solar Facility would not require connection to or expansion of an existing wastewater treatment facility, the construction of which could cause significant environmental effects. This impact would be less than significant.

Stormwater

The Project site is not in an area with an existing or planned stormwater drainage system. Based on preliminary design, the Solar Facility would result in approximately 7,629,470 square feet of impervious surfaces and would require approximately 1,907,368 cubic feet of stormwater storage (Appendix K1). Assuming all basins would be approximately 1.5 feet deep, approximately 1,271,579 square feet of storage would be provided (Appendix K1). Stormwater facilities would be constructed in accordance with County standards. The environmental impacts of the stormwater basins are analyzed throughout this EIR as a component of the Project.

Because this amount of stormwater storage would be sufficient to serve the Solar Facility, the Solar Facility would not require any additional stormwater facilities nor connection to or expansion of an existing stormwater drainage facility, the construction of which could cause significant environmental effects. This impact would be less than significant.

Electricity and Natural Gas

The Solar Facility includes solar PV modules, support structures, electrical inverters, and intermediate voltage transformers. The Solar Facility would include two substations which would receive consolidated intermediate voltage cables from the collector system and step the voltage up to 230 kV via high voltage transformers located in the individual PV substation or shared facilities. Each substation area would include an electrical control building. The proposed substations would tie into PG&E's high-voltage 230 kV Tranquillity Switching Station, via the PG&E Improvements. The Tranquillity Switching Station connects to PG&E's two existing 230 kV transmission lines located directly adjacent to the Switching Station. Electricity would be consumed by the Project, as required, when the Project is not powered by on-site energy generation.

During decommissioning, electrical power facilities would temporarily remain in place for use by the decommissioning and restoration workers until no longer needed. Project decommissioning would occur in accordance with the expiration of the Unclassified Conditional Use Permit and would involve the removal of all above-grade facilities, buried electrical conduit, and all concrete foundations in accordance with a Reclamation Plan. Utility-owned infrastructure would not be removed at the time the Project is decommissioned.

Solar PV projects do not require the use of natural gas for the power generation process; therefore, no natural gas facilities would be constructed. Electric facilities and connections that are proposed as part of the Project could result in environmental impacts. Any potentially significant environmental effects are analyzed and addressed on a resource-by-resource basis throughout Chapter 4, *Environmental Impact Analysis*. Therefore, for the purposes of this section, impacts related to the construction of electric facilities would be less than significant.

Telecommunications

The Solar Facility would be designed to employ a Supervisory Control and Data Acquisition (SCADA) system to allow remote control and monitoring of the proposed project's operation. Access to the project's SCADA system would be accomplished with wireless and/or hard-wired connections to locally available commercial service providers. Thus, the telecommunication infrastructure could result in environmental impacts, which are addressed throughout this EIR as a component of the Project. Therefore, for the purposes of this section, construction of the telecommunications infrastructure would result in less than significant impacts.

PG&E Improvements

No water, wastewater treatment, natural gas, and telecommunications infrastructure would be constructed or affected as part of the PG&E Improvements.

To accommodate the Solar Facility and interconnect the Project's proposed 230 kV gen-tie line to the PG&E Switching Station, PG&E would complete improvements to its electrical facilities, including expansion of the existing Tranquillity Switching Station and construction of a new 230 kV transmission line. Electric facilities and connections that are proposed as part of the Project could result in environmental impacts. Any potentially significant environmental effects are analyzed and addressed on a resource-by-resource basis throughout Chapter 4, *Environmental Impact Analysis*.

The PG&E Improvements would result in 2.9 acres of impervious surface and would require approximately 0.97 acre (42,108 square feet) of detention basin space for stormwater runoff (Appendix K3). Potential locations for this basin are shown in Figure 4 of Appendix K2). Stormwater facilities would be constructed in accordance with County standards.

The PG&E Improvements would not require any additional water, wastewater treatment, stormwater facilities, electric power, and telecommunications infrastructure, the construction of which could cause significant environmental effects, beyond that analyzed in this EIR. Therefore, for the purposes of this section, impacts related to the construction of additional water, wastewater treatment, stormwater drainage, electric power, and telecommunications infrastructure would be less than significant, and no mitigation is required.

Further, the Solar Facility in conjunction with the PG&E Improvements would not require additional wastewater treatment, stormwater drainage, electric power, and telecommunications infrastructure beyond that analyzed in this EIR and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold b:	Whether the project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years

Impact USS-2 SUFFICIENT WATER SUPPLIES FROM EXISTING ENTITLEMENTS AND RESOURCES ARE AVAILABLE TO SERVE THE PROJECT DURING NORMAL, DRY, AND MULTIPLE DRY YEARS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

Construction and Decommissioning

During construction, the primary uses of water would be dust suppression, grading, and wheel washing, as necessary. If grading and grubbing are required, it is anticipated construction would need up to 360 acre-feet per year (AFY) of water for dust suppression, truck wheel washing, and miscellaneous purposes (Appendix K3).

The temporary construction demand of up to 360 AFY would introduce a more intensive water use than has been the case for the site for the past 10 years, but this use would be short-term. Construction demands would be met either using groundwater supplies, understood to recover from short-term periods of heavier pumping,[1] or WWD-provided water, managed by WWD for long-term supply reliability (Appendix K3; Westlands Water District GSA and County of Fresno GSA-Westside 2019). In either case, WWD would assess and approve the use of water on the Project site and temporary construction-related water use would not result in adverse effects on water supply reliability. This is because the Project's construction water requirements of up to 360 AFY represent a small portion of the safe yield amount for the Westside Subbasin (approximately 200,000 AFY), a supplier for WWD (Appendix K3).

Water use during Solar Facility decommissioning is expected to be similar to that for construction. At this time, it is not possible to quantitatively evaluate potential impacts from Project decommissioning, as the technology or construction practices that would be available in 35 years are unknown. Therefore, based on current decommissioning practices and as a reasonable-worst case, this analysis assumes impacts generated during future decommissioning would be similar to impacts generated during construction of the Solar Facility, and impacts would be less than significant.

Operations and Maintenance

During the operations and maintenance phase, which could last up to 35 years, up to 20 AFY of water would be used for module washing/rinsing, maintenance and O&M building restroom facilities (Appendix K3). A licensed provider would supply portable restrooms for personnel temporarily on site to perform periodic module washing (up to four times per year).

Water for operations and maintenance would be provided by an off-site local municipal water purveyor, either the City of Fresno or the City of Mendota (Appendix K3). The City of Fresno utilizes surface water and groundwater supplies, as well as recycled water. Water supply is managed per the *Fresno/Clovis Metropolitan Area Water Resources Management Plan* (Fresno 2014) and the

[1] As shown in Table 3 of the WSA prepared for the Project (Appendix K3), while the groundwater elevation in the Westside Subbasin consistently falls during years of more intense pumping, it also consistently recovers during years of less intense pumping, suggesting that water supply recovers after years of temporary overdraft.

Sustainable Groundwater Management Act. The City of Mendota relies entirely on groundwater resources managed in accord with the Sustainable Groundwater Management Act. Water supply provided to the proposed Solar Facility by the City of Fresno or the City of Mendota would occur in compliance with the aforementioned plans and regulations. Based on this compliance and the information and analysis in the WSA for the proposed Solar Facility, the Solar Facility's operational demand of 20 AFY would not result in adverse water supply reliability impacts to the water sources utilized by these municipalities (Appendix K3). This is because the Project's operational water requirements of up 20 AFY represent a small portion of the safe yield amount for the Kings Subbasin (approximately 72,500 AFY), which supplies the City of Fresno. Although the safe yield of the Delta-Mendota Subbasin has not been characterized, the City of Mendota monitors groundwater pumping activities and use, including but not limited to the Project (Appendix K3).

Based on the above analysis, sufficient water supply is available to serve Project construction, operation and maintenance, and decommissioning under normal, single-dry water year, and multiple-dry water year conditions. Therefore, impacts of the Project would be less than significant.

PG&E Improvements

Construction water use for PG&E Improvements would be temporary and the primary uses of water would be dust suppression, grading, and wheel washing, as necessary. WWD would assess and approve the use of water on the PG&E Improvements site and temporary construction-related water use would not result in adverse effects on water supply reliability because the construction water requirement of up to 360 AFY represent a small portion of the safe yield amount for the Westside Subbasin (approximately 200,000 AFY), a supplier for WWD (Appendix K3). Operations and maintenance of the PG&E Improvements would not include uses that would result in water demand. Impacts would be less than significant and no mitigation is required.

Further, the Solar Facility in conjunction with the PG&E Improvements would not require additional water supply beyond that analyzed in this EIR and no mitigation would be required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold d:	Whether the project would generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals
Threshold e:	Whether the project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste

Impact USS-3 THE PROJECT WOULD COMPLY WITH APPLICABLE SOLID WASTE MANAGEMENT AND REDUCTION STATUTES AND REGULATIONS AND WOULD NOT GENERATE SOLID WASTE IN EXCESS OF STATE OR LOCAL STANDARDS OR IN EXCESS OF THE CAPACITY OF LOCAL INFRASTRUCTURE, OR OTHERWISE IMPAIR THE ATTAINMENT OF SOLID WASTE REDUCTION GOALS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Solar Facility

The Solar Facility would generate waste during construction, operation and maintenance, and decommissioning.

Construction

As described in Section 2.10.5, *Non-Hazardous Solid Waste*, of the *Project Description*, construction waste materials would be sorted on site throughout construction, and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility. It is anticipated that at least 20 percent of construction waste would be recyclable (Recurrent Energy 2018). Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and spread on the Project site for weed control, as appropriate. Other materials, such as vegetation, might be composted off site. It is estimated that construction activities would generate approximately 4,000 cubic yards of solid waste over an approximately 18-month period. This would result in the disposal of approximately 55 cubic yards of solid waste per week and this volume could be disposed of one day per week.

As described in Section 4.14.1, the American Avenue Landfill is permitted to receive 2,200 tons of waste per day and has remaining capacity of approximately 29,358,535 cubic yards (CalRecycle 2018a). CalRecycle estimates construction debris can weigh between 400 and 2,400 pounds per cubic yard, depending on its content (CalRecycle 2018d). Although the Solar Facility construction debris would not contain asphalt or concrete because construction would not include the demolition of these materials, this analysis uses the higher weight estimate as a conservative assumption. The weight of 55 cubic yards at 2,400 pounds per cubic yard would be approximately 66 tons. Even if this amount was delivered to the American Avenue Landfill in one day, the landfill would have an average of 2,134 tons remaining of its daily permitted capacity. Therefore, landfill waste generated by the Solar Facility would not exceed the site's permitted daily tonnage nor deplete long-term capacity substantially.

The Solar Facility would be required to comply with the CalGreen Code, which requires 65 percent construction waste diversion, and the Fresno County C&D Debris Recycling Program, which would require the Project proponent to prepare and implement a Waste Management Plan, and generate a waste log during construction (Fresno County 2017b).

Operations and Maintenance

Operation and maintenance activities could produce up to 1 cubic yard of waste per week based on eight full-time staff. Waste generated could include broken or rusted metal, defective or malfunctioning equipment, electrical materials, empty containers, other miscellaneous solid waste, and typical refuse from operations and maintenance staff. During operation and maintenance, waste disposal would occur consistent with applicable federal, state, and local recycling, reduction, and waste requirements and policies. Over the 35-year operational period, waste would be disposed of at the American Avenue Landfill or a combination of the American Avenue Landfill and Billy Wright Disposal Site (as the American Avenue Landfill is expected to reach its permitted capacity by 2031). These landfills would have sufficient capacity to accept anticipated Project-generated waste of 1 cubic yard per week, as American Avenue Landfill is permitted to receive 2,220 tons of waste per day (which equates to 12,950 cubic yards per week) and the Billy Wright Disposal Site is permitted to receive 2,000 tons of waste per day (which equates to 11,667 cubic yards per week). The Project's operational waste generation of 1 cubic yard per week would be negligible compared to the permitted capacity of the landfills that would serve the Project. Therefore, general waste from Solar Facility O&M would be served by a landfill(s) with sufficient capacity and would not result in conflicts with statutes and regulations regarding non-hazardous solid waste.

As discussed in Section 2, *Project Description*, if batteries are used in the energy storage system, they would likely be recycled once their useful life is completed, given that technology to recycle such storage batteries exists and energy storage companies (such as Tesla) are currently providing recycling; however, recycling facilities are not readily available as of the date of this document. Therefore, this analysis assumes that all batteries in the storage system, which would be replaced once approximately 20 years after the Project begins operation and then removed at end of life, may be required to be disposed of as hazardous waste, resulting in the generation of an estimated 2,500 tons of hazardous solid waste around 20 years after initiation of operation. This waste would be disposed of at the Clean Harbors Buttonwillow landfill. As discussed above, the landfill can accept 10,500 tons of waste per day and has sufficient capacity to accept potential battery waste from the project. Therefore, the Solar Facility would be served by a landfill(s) with sufficient capacity, would not result in conflicts with statutes and regulations regarding solid waste, and would comply with applicable solid waste reduction statutes and regulations. Impacts would be less than significant.

Decommissioning

The waste generated during decommissioning and site reclamation would be primarily non-hazardous and would be recycled. Anticipated solid waste would include concrete, metal, plastics, PV panels, and (if used in the storage system) batteries. Damaged panels would be disposed of in compliance with applicable hazardous materials disposal requirements, described in Section 4.9, *Hazards and Hazardous Materials*. Recyclable materials, including PV panels and potentially batteries, would be removed from the waste stream and recycled prior to disposal of solid waste in an approved landfill. There are several possible disposal and recycling locations for the PV panels including Recycle PV and First Solar. Recycle PV of Grass Valley California opened a facility in 2018 for complete recycling of PV panels and internal materials in Arizona with plans to open several more facilities. First Solar has a state-of-the-art facility in Ohio for recycling all the components of solar arrays and state that they have a recoverable rate of 90% of the materials processed (First Solar 2021). In addition, there are several companies located in and near Fresno that handle hazardous waste disposal (e.g., ADCO Services and T&M Hazardous Waste Management) and recycling of batteries (e.g., Waste Management, Mid-Valley Disposal, and occasional recycling events sponsored by the County and others). It is conservatively estimated that, similar to

construction, decommissioning would result in generation of approximately 4,000 cubic yards of solid waste, or 55 cubic yards per week. In addition, decommissioning of the Solar Facility has the potential to result in approximately 2,500 tons of hazardous waste from battery removal (if used during operation of the Solar Facility). Non-recyclable waste would be disposed of in a landfill, as described for the construction period.

Decommissioning of the Solar Facility could occur after the American Avenue Landfill, Billy Wright Disposal Site, and Clean Harbors Buttonwillow have reached their permitted capacities in 2031, 2054, and 2040, respectively (CalRecycle 2018a, 2018c, 2019). As such, estimation of these facilities' capacity to accommodate decommissioning waste from the Project is speculative at this time. Counties are required, under the California Integrated Waste Management Act, to prepare a Countywide Integrated Waste Management Plan that demonstrates sufficient capacity is available to serve all jurisdictions in the County. To comply with the California Integrated Waste Management Act, discussed in Section 4.14.1, Fresno County will to be required to continue to demonstrate, over a five-year reporting cycle, it has at least 15 years of remaining landfill capacity available in the County. Given this requirement as part of long-term strategic planning efforts, it is expected that additional landfill or other solid waste disposal capacities would be identified to address disposal demand following closure of these landfills. The Solar Facility would utilize available capacity in regional landfills or other available solid waste facilities when decommissioning occurs.

The waste disposal demand associated with decommissioning the Solar Facility would not, on its own, require construction of new solid waste disposal facilities. Some or all of the components removed during decommissioning activities (e.g., aluminum, steel components, and batteries) would be salvaged and/or recycled, as feasible. Components not able to be salvaged would be removed and disposed of in accordance with the laws and regulations in effect at the time of decommissioning. Waste disposed to landfills during Project decommissioning would be distributed to open landfills with sufficient capacity to accommodate such waste.

This analysis indicates sufficient landfill capacity will be available to serve Project construction, operation and maintenance, and decommissioning; the Project would not result in impacts related to conflicts with federal, state, and local management and reduction statutes and regulations related to solid waste. Therefore, impacts would be less than significant.

PG&E Improvements

During construction, the PG&E Improvements would involve the transport of general construction materials (e.g., concrete, aggregate, wood, metal, and fuel), as well as the materials necessary to construct the improvements. Solid waste generated during construction and decommissioning would include debris such as concrete, wood, brick, glass, plastics, scrap metal, and similar material. Construction waste that is generated at the project site would be sorted to separate recyclable and nonrecyclable materials. Such waste would be stored in dumpsters that would be serviced by a licensed solid waste hauler in the County. Non-hazardous construction debris generated would be disposed of in local landfills in accordance with applicable regulations. PG&E would be required to comply with the CalGreen Code, which requires 65 percent construction waste diversion, and the Fresno County C&D Debris Recycling Program, which would require the Project proponent to prepare and implement a Waste Management Plan, and generate a waste log during construction (Fresno County 2017b).Operation and Maintenance of the PG&E Improvements is not expected to generate waste on a recurring basis.

The exact quantity of solid waste that would be generated from construction and decommissioning of the PG&E Improvements is unknown; however, this analysis conservatively assumes one fifth the

amount of waste as the Solar Facility, which would be 11 cubic yards of solid waste per week or 13.2 tons per week.

Based on the American Avenue Landfill's permitted capacity to receive 2,200 tons of waste per day, even if this amount of 13.2 tons and the Solar Facility's 66 tons were delivered to the American Avenue Landfill in one day, the landfill would have an average of 2,120.8 tons remaining of its daily permitted capacity. Therefore, landfill waste generated by the PG&E Improvements in combination with the Solar Facility would not exceed the site's permitted daily tonnage nor deplete long-term capacity substantially. Impacts would be less than significant and no mitigation is required.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.14.2.3 Cumulative Impacts

The Project would have no impact with respect to wastewater facilities. Therefore, the Project would not cause or contribute to significant cumulative impacts in this area. The cumulative analysis provided below considers the incremental impacts related to water resources, stormwater facilities, and landfill capacity caused by the Project from the start of construction through the end of decommissioning, in combination with other past, present, and reasonably foreseeable projects.

Water

The geographic scope of potential cumulative impacts related to water entitlements and resources would be the area underlain by the Westside, Kings, or Delta-Mendota subbasins of the San Joaquin Valley Groundwater Basin. Multiple projects, many of which are solar energy production facilities (i.e., Little Bear Solar 1, 3, 4, 5, and 6; Luna Valley Solar I; Heartland 1 and 2; and Sonrisa Solar) are proposed throughout these subbasins.

Cumulative demand for water during the construction phase of cumulative projects occurring in the Westside, Kings, and Delta-Mendota subbasins would be short-term and met using groundwater. In this region, groundwater levels recover from short-term periods of heavier than average withdrawal as the district manages for long-term supply reliability (Appendix K3). The WSA for the proposed Project (Appendix K3) states that WWD manages local groundwater resources of the Westside Subbasin, and utilizes imported surface water to supplement groundwater supplies; it is reasonably assumed that WWD would not use or distribute allocated surface water supplies or available groundwater supplies in a manner unsustainable for long-term water supply reliability, based on existing management programs. Therefore, the cumulative construction-related water demand is not anticipated to result in the need for new or expanded water entitlements, and the Project would not have a cumulatively considerable contribution.

Operational water for the Project would be obtained from the City of Fresno or the City of Mendota, depending upon which supplies are able to meet Project needs along with those of cumulative projects that occur at the time of Project implementation. Both the Westside and Kings subbasins are in the jurisdiction of the Central Valley Regional Water Quality Control Board and are subject to management per the Basin Plan for the Central Valley Region (Appendix K3). It is reasonably assumed that the City of Fresno would not use or distribute its allocated, imported water or natural

water supplies in such a way that would be unsustainable to long-term water supply reliability. Any water obtained for the Project from the City of Mendota would be pumped from a metered well under the supervision of City staff. It is anticipated that should adverse effects of Project-related groundwater pumping become apparent at a City of Mendota well, City staff would cease such pumping activities and Project operational water would be obtained from an alternate source. Operational water consumption would be substantially lower than construction demand for each of the projects in the cumulative scenario, similar to that of the Project. In addition, the Fresno County Solar Guidelines require projects to identify the source of water that will be used and to provide data on water deliveries and/or production capacities of wells. Compliance with applicable guidelines and water management practices by all providers would assure the Project would not contribute to a significant cumulative impact due to operational water demand, nor would the Project have a cumulatively considerable impact.

Stormwater

The geographic scope of potential cumulative impacts related to stormwater would be the areas of Fresno County not included in the Fresno Metropolitan Flood Control District that are downstream of the Project site since downstream areas are most likely to be impacted. As discussion under Impact USS-2 above and in Section 4.14, *Hydrology and Water Quality*, the Project would have less than significant impacts on stormwater. The Project would implement drainage control measures in accordance with County drainage standards and post-construction measures of the statewide Construction General Permit (SWRCB Order No. 2009-0009-DWQ) to accommodate stormwater runoff from the project site. Other cumulative projects would be required to implement similar stormwater facilities to accommodate stormwater runoff from their project site. As the Project and each cumulative project would be required to incorporate sufficient stormwater features as part of project design to address stormwater and drainage impacts, the Project would not contribute to a significant cumulative impact to stormwater facilities.

Electricity and Natural Gas

The geographic scope of potential cumulative impacts related to electrical service would be PG&E's electrical service territory, which extends far beyond Fresno County. Within this area, the Project would construct new and expanded electric power facilities, which could cause significant environmental effects. All of the projects identified in Section 3.4, *Cumulative Development*, and shown in Figure 3-1, *Cumulative Projects within 15 miles of the Project Site*, also are within this service area and are assumed to have resulted in or will result in the construction of new or expanded electric power facilities. Other PG&E electrical infrastructure construction is governed by the CPUC. See, for example, the initial study/mitigated negative declarations (IS/MNDs) prepared by the CPUC for PG&E's Shepherd Substation Project, which would add facilities to the existing power grid and accommodate future development and growth (CPUC 2018), and Sanger Substation Expansion Project, which would expand electric facilities to increase the reliability of electric service (CPUC 2017). Both of these projects would be located in unincorporated Fresno County, California.

The cumulative renewable energy benefits that would result from the combination of the Project and other solar projects in the cumulative scenario would have a beneficial impact relative to energy conservation and greenhouse gas emissions reduction associated with the continued migration toward less-carbon-intensive energy sources. Therefore, the Project's incremental impacts, when combined with the incremental impacts of past, present, and reasonably foreseeable future projects in the cumulative scenario would not result in a significant adverse impact related to

the construction of new or expanded electric power facilities. No natural gas facilities would be constructed or otherwise impacted as a result of the Project. Therefore, the Project would not contribute to cumulative impacts to natural gas services and facilities.

Telecommunications

The projects identified in Section 3.4, *Cumulative Development*, in Section 3.0, *Environmental Setting*, may be within this service area of other telecommunications providers and facilities. However, the Project's newly-proposed telecommunications facilities would service only the Project. Therefore, the impacts of constructing, operating, and maintaining this new telecommunications infrastructure would not combine with the incremental impacts of other projects' new telecommunications infrastructure. No significant cumulative impact would result.

Solid Waste

The geographic scope of potential cumulative impacts to landfill capacity would be the areas served by the American Avenue and Billy Wright landfills. As shown in Table 3-1 described in Section 3.3, *Cumulative Effects Approach*, all projects in the cumulative scenario, such as Little Bear 1, 3, 4, 5, and 6; Luna Valley Solar I; Heartland 1 and 2; and Sonrisa Solar, are renewable energy, similar to the Project, and therefore would be expected to generate similar amounts and types of solid waste in proportion to their size. With or without implementation of the proposed Project, new or expanded solid waste facilities to serve the region would be required as the capacity of existing facilities diminishes, which represents a cumulative impact. However, the Project's incremental contribution would not be cumulatively considerable in light of the amount of waste anticipated to result during the Project's limited construction period.

During operations and maintenance, the cumulative volume of solid waste disposal would be substantially lower compared with construction. During decommissioning and reclamation, the American Avenue Landfill and Clean Harbors Buttonwillow Landfill may not be available and the Project and other projects requiring solid waste disposal may need to use the Billy Wright Landfill and/or an alternate location. However, as described above, to comply with the Integrated Waste Management Act, Fresno County is required to demonstrate it has at least 15 years of remaining capacity in landfills throughout the County, or to create and implement a plan to site additional capacity to achieve and continue to meet the 15-year capacity requirement. It is anticipated the County therefore would have at least 15 years of remaining capacity at the time of decommissioning, in compliance with this Act, and that decommissioning waste could be disposed of in Fresno County within the limits of available permitted capacity. The same state and local requirements for waste diversion and recycling that would apply to the Project would apply to other projects in the cumulative scenario; the total volume of waste landfilled under the cumulative scenario is not expected to exceed the permitted capacity of available landfills. Although cumulative impacts related to solid waste would be speculative, the Project's contribution would not be cumulatively considerable.

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4.15 Issues Addressed in the Initial Study

This section summarizes the potential environmental effects of the Project that were determined to be less than significant or have no impact, as described in the Initial Study for the Project (refer to Appendix A). The items listed below are contained in the County's environmental checklist form and the environmental checklist form included in Appendix G of the CEQA Guidelines. In the instances where a Project impact is potentially significant, the issue is addressed in detail in Section 4.0, *Environmental Impact Analysis*, of this EIR. Section 4.0 also includes an expanded discussion of the settings under each environmental issue area discussed therein.

The Initial Study determined that the Project would not result in adverse or potentially significant impacts related to several thresholds in the categories of Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use, Mineral Resources, Noise, Population, Public Services, Recreation, Transportation, Tribal Cultural Resources, and Utilities.

4.15.1 Impacts Less than Significant or No Impact

During preparation of the Initial Study (Appendix A), the Project was determined to result in no impact or less than significant impacts to several of the environmental checklist significance thresholds in Appendix G of the State CEQA Guidelines, as presented in this section.

4.15.1.1 Aesthetics

Significance Thresholds

Would the Project:

a) Have a substantial adverse effect on a scenic vista?

b) Substantially degrade scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Impact Analysis

There are no designated scenic vistas within the viewshed of the Project site; therefore, no impact to a scenic vista would result from implementation of the Solar Facility and PG&E Improvements.

The Caltrans Scenic Highway Mapping System identifies one designated state scenic highway segment and three eligible state scenic highway segments in Fresno County. These highway segments are between 20 and 50 miles from the Project site. Therefore, the Project site is not located in the viewshed of any of these highways. In addition, the Project site is located over 6 miles east of I-5 (designated scenic roadway in the Fresno County General Plan) and would not obstruct views of the coastal foothills to the west. There would be no impact from the Solar Facility and PG&E Improvements on scenic resources viewed from a state scenic highway.

4.15.1.2 Agriculture and Forestry Resources

Significance Thresholds

Would the Project:

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)); timberland (as defined by Public Resources Code Section 4526); or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

d) Result in loss of forest land or conversion of forest land to non-forest use?

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use?

Impact Analysis

The Project site and immediate vicinity does not contain any land defined as forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]). Therefore, the Solar Facility and PG&E Improvements would not conflict with existing zoning of forest land or result in the loss or conversion of forest land. No impact to forestry resources would occur.

4.15.1.3 Air Quality

Significance Thresholds

Would the Project:

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Impact Analysis

The Project involves the construction, operation and maintenance, and decommissioning of a solar energy facility and associated infrastructure, which do not produce other emissions, including those leading to odors, that would affect a substantial number of people. No impact would occur.

4.15.1.4 Biological Resources

Significance Thresholds

Would the Project:

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Impact Analysis

The Project site consists of agricultural land and is not traversed by any drainages or washes. The Project site does not contain any state or federally protected wetlands or other waters of the state and U.S. Therefore the Solar Facility and PG&E Improvements would result in no impact to state and federally protected wetlands.

The habitat conservation plan nearest to the Project site is the Eastern Fresno Habitat Plan, located approximately 45 miles northeast of the Project site. Since the Project site is not located within the boundaries of any adopted Habitat Conservation Plan or Natural Community Conservation Plan, the Project would not conflict with the provisions of an adopted/approved Habitat Conservation Plan or Natural Community Conservation Plan. No impact would occur.

4.15.1.5 Cultural Resources

Significance Thresholds

Would the project:

a) Cause a substantial adverse change in the significance of a historical resources as defined in Section 15064.5?

Impact Analysis

According to a Cultural Resources Report prepared in 2016 by Rincon Consultants, a historic well with associated water pump was identified on the Project site. However, this resource was not found to be listed or eligible for listing on a register of historic resources. No historical resources under CEQA were identified on the Project site. Therefore, potential impacts to a historical resource, specifically built environment resources, as defined in CEQA Guidelines Section 15064.5 would be less than significant.

4.15.1.6 Geology and Soils

Significance Thresholds

Would the Project:

a) Directly or indirectly cause potential adverse effects, including the risk of loss, injury, or death involving:
   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone map issued by the State geologist for the area or based on other substantial evidence of a known fault?
   iv. Landslides?

Impact Analysis

The Project site is not located in an Earthquake Fault Rupture hazard zone as defined under the Alquist-Priolo Earthquake Fault Zoning Act, and no active or potentially active faults are mapped within the Project site. The closest active faults to the Project site are the Nunez Fault, located 25 miles south, the Creeping Section of the San Andreas Fault, located 35 miles southwest, and the Ortigalita Fault, located 35 miles northwest. There is no substantial evidence that an otherwise active fault capable of producing fault rupture underlies the Project site. Therefore, the Solar Facility

and PG&E Improvements would not directly or indirectly cause potential adverse effects from fault rupture. No impact would occur.

The Project site is located on relatively flat terrain in the San Joaquin Valley. Since there are no hillsides and other geographic features associated with landslide hazards present at the Project site, the Solar Facility and PG&E Improvements would not direct or indirectly cause potential adverse effects from landslides. No impact would occur.

4.15.1.7 Hazards and Hazardous Materials

Significance Thresholds

Would the Project:

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

d) Be located on a site which is included on a list of hazardous material 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?

e) For a project located in an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Impact Analysis

The Project would not be located on a site included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and would not create a significant hazard to the public (U.S. Environmental Protection Agency 2018; Department of Toxic Substances Control 2018; State Water Resources Control Board 2018). Furthermore, the Project site is not located within 0.25 mile of an existing or proposed school. No impact would occur.

Neither construction, operation and maintenance, nor decommissioning would involve the closure of roadways, interfere with identified evacuation routes, restrict access for emergency response vehicles, or restrict access to critical facilities such as hospitals or fire stations. The Solar Facility and PG&E Improvements would not impair access to or operation of the Emergency Operations Center because it is located approximately 35 miles away. The nearest hospitals to the Project site are in Coalinga and Fresno, both approximately 30 miles away. Impacts of the project on emergency response and evacuation would be less than significant.

The nearest airport or private airstrip to the Project site is William Robert Johnston Municipal Airport located approximately 9.5 miles north of the Project site. Since the Solar Facility and PG&E Improvements are not located within an airport land use plan or within the vicinity of a private airstrip, implementation would not result in a safety hazard or excessive noise for people residing or working in the Project area. No impact would occur.

4.15.1.8 Land Use and Planning

Significance Thresholds

Would the Project:

a) Physically divide an established community?

Impact Analysis

The site is located approximately 3.5 miles southwest of the community of Tranquillity at the closest point, and approximately 5.7 miles north of the communities of Three Rocks and Cantua Creek. Since there are no other established communities in the area, the Solar Facility and PG&E Improvements would not physically divide an established community. No impact would occur.

4.15.1.9 Mineral Resources

Significance Thresholds

Would the Project:

a) 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?
b) 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?

Impact Analysis

The Project site is not located in a mineral resource zone as defined by the California Department of Conservation California Geological Survey. In addition, the Project site is not located on, adjacent to, or near mineral resources or recovery sites according to the Mineral Resources Data System, administered by the U.S. Geological Survey. The Solar Facility and PG&E Improvements would not entail construction of structures or facilities for the purposes of extraction or exploration of mineral resources and would not result in the loss of availability of a mineral resource of local, regional, or statewide importance. No impact would occur.

4.15.1.10 Noise

Significance Thresholds

For a project:

c) Located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Impact Analysis

As discussed in *Hazards and Hazardous Materials* above, the nearest airport to the Project site is William Robert Johnston Municipal Airport located approximately 9.5 miles north of the Project site. As such, the Solar Facility and PG&E Improvements are not located in an airport land use plan nor is it within the vicinity of a private airstrip. The Project would not expose people residing or working in the Project area to excessive noise levels from an airport. There would be no impact.

4.15.1.11 Population and Housing

Significance Thresholds

Would the Project:

a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

b) Displace substantial amounts of existing people or housing, necessitating the construction of replacement housing elsewhere?

Impact Analysis

The Project site is currently undeveloped, therefore the Solar Facility and PG&E Improvements would not displace any housing or people. The Solar Facility and PG&E Improvements would not include any new homes or businesses and would not directly induce substantial population growth. Short-term employment during construction and decommissioning would occur, as well as up to eight full time jobs during operations. Construction phases for the proposed project are expected to overlap, and the number of construction workers onsite is expected to range between 132 and 701 workers per day, with a maximum of 974 workers per day occurring for one month when Phases 1 and 2 of the Solar Facility, Phase 1 of the energy storage system, and the PG&E Improvements overlap; however, these jobs are not expected to induce substantial population growth because the existing available Fresno County construction labor pool is sufficient to meet anticipated needs. Growth inducing effects are also included and discussed in Section 5, *Other CEQA Required Discussions*.

The Project would include a perimeter drive, access driveways and drives, and internal drives; however, these roads would be solely for the purpose of access to the Project site during construction and operation and would not increase access to urban areas that would remove obstacles to growth or indirectly increase population growth. In addition, while the Project would contribute to energy supply, which can indirectly support population growth, development of the Project is a response to the State's need for renewable energy to meet its Renewable Portfolio Standard and would interconnect into the State's infrastructure. The power generated would be added to the State's electricity grid, with the intent that it would displace fossil-fueled power plants and their associated greenhouse gas emissions. The Project is not proposed as a source of base-load power in response to growth in demand for electricity. Therefore, the Project would not indirectly induce substantial population.

4.15.1.12 Public Services

Significance Thresholds

Would the Project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

1. Fire protection?
2. Police protection?
3. Schools?
4. Parks?
5. Other public facilities?

Impact Analysis

The Solar Facility and PG&E Improvements would neither involve the construction of new or physically altered governmental facilities nor result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts. Increases in demand for public services requiring new or physically altered governmental facilities are typically associated with substantial increases in population. The Solar Facility and PG&E Improvements would not include new residences or a significantly large-scale development that cannot be provided with services through existing facilities. Therefore, impacts to public services would be less than significant.

4.15.1.13 Recreation

Significance Thresholds

Would the Project:

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Impact Analysis

As discussed above in *Population/Housing* and *Public Services*, the Solar Facility and PG&E Improvements do not include new residences and would not increase the population. Therefore, no substantial new population growth resulting in physical deterioration of existing recreational facilities would occur, nor would the Solar Facility and PG&E Improvements require the construction of new or expanded recreational facilities. No impact to recreation would occur.

4.15.1.14 Transportation

Significance Thresholds

Would the Project:

a) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities?

Impact Analysis

There are no existing or planned pedestrian, bicycle, or transit facilities within the Project area with which the Solar Facility or PG&E Improvements could interfere. In addition, the Project would not introduce a barrier to non-motorized travel. There would be no conflict with adopted policies, plans, or programs supporting public transit, bicycle, or pedestrian modes, and since there are no facilities

in the affected area, the Solar Facility and PG&E Improvements would not decrease the performance or safety of public transit, bicycle, or pedestrian facilities. No impact would occur.

4.15.1.15 Tribal Cultural Resources

Significance Thresholds

Would the Project:

a) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is 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)?

b) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 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 2024.1?

Impact Analysis

The Solar Facility and PG&E Improvements are located in the immediate area of interest for the Table Mountain Rancheria. A search of the Native American Heritage Commission Sacred Lands Inventory identified no known Native American traditional sites/places on the Project site. The County conducted consultation under AB 52, providing notification to the Table Mountain Rancheria, Dumna Wo Wah, Santa Rosa Rancheria, and the Picayune Rancheria of the Chukchansi Indians on May 4, 2018. Table Mountain Rancheria declined participation in a letter dated May 17, 2018, and no other responses were received within 30 days. There would be no impact to tribal cultural resources.

4.15.1.16 Utilities and Service Systems

Significance Thresholds

Would the Project:

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Impact Analysis

The Project site is located in rural unincorporated Fresno County and would not be served by a municipal wastewater treatment provider. During construction and panel-washing events, restroom facilities would be provided by portable units to be serviced by licensed providers. During operation, maintenance and decommissioning phases of the Solar Facility, a septic system and leach field would be installed adjacent to the O&M building to support the restroom facilities and sewage needs of the eight-permanent staff (8 hours per day) during operation.

5 Other CEQA Required Discussions

This section discusses growth-inducing impacts and irreversible environmental impacts that would potentially result from the Project.

5.1 Growth Inducement

Section 15126(d) of the CEQA Guidelines provides the following guidance regarding growth-inducing impacts:

> A project is identified as growth-inducing if it would 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 increases employment levels, removes barriers to development, or provides resources that lead to secondary growth. With respect to employment, construction phases of the Solar Facility (including energy storage system) and PG&E Improvements are expected to overlap, and the number of construction workers is expected to range between 132 and 701 workers per day, with a maximum of 974 workers per day during approximately one month when Phases 1 and 2 of the solar facility, Phase 1 of the energy storage system, and the PG&E Improvements may overlap. The existing construction labor pool in Fresno County is sufficient for meeting Project needs.[1] Following construction, Solar Facility operation would require up to eight full-time personnel in permanent positions (or personnel hours totaling eight full-time positions) and maintenance activities would require up to 40 additional personnel at any given time. Operation and maintenance of the PG&E Improvements would not require additional staff. Therefore, the number of personnel on the Project site during Solar Facility operation may range from zero (it is not necessary for staff to be present during plant operations) to 48 during periodic, routine maintenance events. Decommissioning is expected to require a workforce similar to construction. Because construction and decommissioning would be temporary, the Project is unlikely to cause substantial numbers of people to relocate to Fresno County. Therefore, the Project would not result in a large increase in employment levels that would significantly induce growth.

As discussed in Section 4.15, *Issues Addressed in the Initial Study*, under *Population and Housing*, jobs that would be generated by the Project are not expected to induce substantial population growth because the existing available Fresno County construction labor pool is sufficient to meet anticipated needs. While it is expected that construction workers would commute to the Project site instead of relocating to Fresno County, even if all workers were to relocate to Fresno County, the existing available housing supply could accommodate them without requiring new construction.[2] Therefore, the Project is not expected to induce population growth, the housing and provision of services for which could cause significant adverse environmental impacts.

The Project would include a perimeter road, access driveways and roads, and internal roads; however, these roads would be solely for the purpose of access to the Project site during

[1] The unemployment rate in the Fresno Metropolitan Statistical Area was 6.3 percent in October 2018 as compared to 4.0 percent for California and 3.5 percent for the nation during the same period (California Employment Development Department 2018).
[2] Fresno County was estimated to have 326,213 dwelling units in 2017 with a rental vacancy rate of 3.9 percent, for a total of approximately 12,722 dwelling units available for rent (U.S. Census Bureau 2018).

construction and operation and would not increase access to urban areas that would remove obstacles to growth or indirectly increase population growth.

Although the Project would contribute to the energy supply, which supports growth, the development of power infrastructure is a response to increased market demand, and the availability of electrical capacity by itself does not ensure or encourage growth within a particular area. Further, the proposed solar power is intended to offset the use of fossil fuels to generate electricity. Other factors such as economic conditions, land availability, population trends, availability of water supply or sewer services, and local planning policies have a more direct effect on growth.

The PG&E Improvements would expand the existing Tranquillity Switching Station and construct a new 230 kV transmission line to accommodate the Solar Facility and interconnect the Project's proposed 230 kV gen-tie line to the PG&E Switching Station. The proposed improvements would only serve the Solar Facility and the switching station's electrical busbar (a conducting bar that carries heavy currents to supply several electric circuits) would not increase in size. While the PG&E Improvements could reduce potential constraints for other solar facilities, those facilities would require individual discretionary actions and CEQA review. PG&E is an investor-owned utility, regulated by the California Public Utilities Commission (CPUC). The utility's transmission system is operated by the California Independent System Operator (CAISO) under regulations established by the Federal Energy Regulatory Commission. When an electricity generator requests use of PG&E's transmission facilities, PG&E is required to provide access after completion of power flow and cost studies. The CPUC evaluates each PG&E project to ensure that its need and costs are justified and appropriate, and that financial effects on California electricity ratepayers are appropriate. Any transmission system upgrades that are required as a result of other solar projects would need to be evaluated by the CPUC in accordance with CEQA as a part of the CPUC permitting process. Because any potential transmission system upgrades would be speculative, the potential for population growth induced by the transmission system upgrades from other solar facilities would also be speculative. Therefore, the proposed project is not expected to be large enough to induce the development of other large solar projects and population growth in the region.

5.2 Irreversible Environmental Effects

Section 15126.2(c) of the CEQA Guidelines defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continuing phases of a project. Irreversible impacts also can result from damage caused by environmental accidents associated with a project. Irretrievable commitments of resources should be evaluated to ensure that such consumption is justified.

Buildout of the Project would commit nonrenewable resources during Project construction and ongoing utility services during Project operations until decommissioning, which as discussed in Section 2, *Project Description*, would occur after 35 years. During operations, oil, gas, and other fossil fuels and nonrenewable resources would be consumed and irreversible commitments of small quantities of nonrenewable resources would occur as a result of long-term operations. However, once operational, the Project would result in a substantial net benefit associated with the amount of renewable energy that would be generated. Therefore, the project would not commit resources irreversibly.

6 Alternatives

As required by Section 15126.6 of the CEQA Guidelines, this EIR examines a range of reasonable alternatives to the Project that would attain most of the basic Project objectives, but would avoid or substantially lessen the potentially significant adverse impacts of the Project. The CEQA Guidelines state that "the range of alternatives required in an EIR is governed by a rule of reason" that requires the EIR to set forth 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 impacts of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project (Section 15126.6[f]). The EIR need not consider every conceivable alternative but must consider a reasonable range of alternatives that will foster informed decision making and public participation (Section 15126.6[a]).

In defining feasibility of alternatives, the CEQA Guidelines state that "among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site" (Section 15126.6).

As discussed in Section 2, *Project Description*, the objectives for the Project are as follows:

- Establish a solar PV power generating facility of a sufficient size and configuration to produce up to 400 MW_{ac} of electricity at the Point of Interconnection in a cost-competitive manner;
- Develop sites in proximity to existing transmission infrastructure in order to minimize environmental impacts;
- Assist California utilities in meeting their obligations under California's RPS Program to achieve 60 percent eligible renewable energy resources by the end of 2030 and zero-carbon sources by the end of 2045, in addition to meeting the 2030 greenhouse gas emissions reduction goals as required by the California Global Warming Solutions Act (SB 32);
- Assist California utilities in meeting their obligations under the CPUC's Energy Storage Framework and Design Program by providing up to 400 MW of storage capacity;
- Facilitate grid integration of intermittent and variable PV energy generation and minimize energy losses associated with transmission to off-site storage by collocating battery storage at the Project site.

Included in this analysis are two alternatives, including the CEQA-required "No Project" alternative, that involve changes to the Project that may reduce the Project-related environmental impacts as identified in this EIR. The analysis in Section 4.1 through 4.15 of this EIR does not identify any significant and unavoidable impacts of the Project. However, the proposed Project would result in impacts that, in the absence of mitigation, would be potentially significant. Therefore, the alternatives analysis focuses on those issue areas.

Implementation of feasible mitigation measures would reduce potentially significant impacts to the following issue areas to less than significant: Agricultural Resources, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, and Utilities and Service Systems. Potential impacts to the

following issue areas were determined not to be significant after further evaluation: Aesthetics, Energy, GHG Emissions, and Land Use and Planning. The following issues were determined to not be significant or have no impact in the Initial Study process: Forestry Resources, Mineral Resources, Population and Housing, Public Services, Recreation, and Tribal Cultural Resources.

The following alternatives are evaluated in this EIR:

- Alternative 1: No Project
- Alternative 2: Reduced Acreage

6.1 Alternatives Considered But Rejected

Per CEQA, the lead agency may make an initial determination as to which alternatives are feasible and warrant further consideration and which are infeasible or otherwise do not warrant further consideration. The following potential alternatives initially were considered but then eliminated from further consideration. Each potential alternative is discussed below, including the rationale for not carrying it forward for more detailed environmental review.

6.1.1 Alternative Sites

6.1.1.1 Other Potential Candidate Sites

The Project site is uniquely suited for solar development for following reasons:

- The Project site is degraded, poorly drained farmland, and is in-part subject to restrictive covenants prohibiting the use of irrigation water on the property. It is not subject to a Williamson Act contract.
- The Project site is flat and will require minimal grading, resulting in limited alteration of existing drainage patterns or surface disturbance.
- The Project has rights to use existing private infrastructure, such as the PG&E's existing Tranquillity Switching Station, and would avoid the costs and impacts associated with building similar infrastructure at another location. Further, the Project would help maximize the utilization of this existing infrastructure.
- The Tranquillity Switching Station has been determined to be a desirable place to interconnect an energy generation project because power injected at this location helps stabilize the electric grid. An interconnection study and Interconnection Agreement for the Tranquillity Switching Station and the Project was already prepared. Changing the substation would require an additional 3 to 5 years of studies and agreements.

For these reasons, and as described below, no other sites were identified that would feasibly accommodate the Project or meet the Project objectives. Therefore, other potential candidate sites were considered but rejected as alternatives for the Project.

6.1.1.2 Other Degraded Agricultural Lands

Fresno County actively participated in the Central Valley Renewable Energy Project, which identified opportunities and constraints for renewable energy development in Fresno County and elsewhere in the southern San Joaquin Valley to focus the siting of new renewable energy projects in low-conflict or impaired areas, or on degraded agricultural lands to accelerate renewable energy development while protecting natural resources. Defenders of Wildlife synthesized input received

from the County and other government agencies, renewable energy developers, agricultural interests, the conservation community, and published a report called *Smart from the Start: Responsible Renewable Energy Development in the Southern San Joaquin Valley* (Defenders of Wildlife 2012).

One key recommendation of the report is that renewable energy development be focused on impaired or degraded lands, such as "agricultural lands that are demonstrably chemically or physically impaired" (Defenders of Wildlife 2012). The report describes Westland Water District lands, which include the Project site, as an example of smart-from-the-start renewable energy project siting (see, e.g., Defenders of Wildlife 2012, p. 8). Because the Project is proposed on a site expressly recommended in the report, the County did not consider other degraded agricultural lands within the County as potential alternative sites.

6.1.1.3 Impaired or Underutilized Lands

A second key recommendation made in *Smart from the Start: Responsible Renewable Energy Development in the Southern San Joaquin Valley* is that renewable energy development be focused on "brownfields, closed landfills, Superfund sites, Resource Conservation and Recovery Act (RCRA) and closed mine lands" (Defenders of Wildlife 2012). The County researched potentially contaminated and underutilized sites identified as appropriate for solar-PV projects as part of the United States Environmental Protection Agency's Re-Power America's Lands Project and reviewed the RE–Powering Screening Dataset (which provides details for more than 80,000 sites nationwide that have been pre-screened for renewable energy potential) to identify potential utility-scale or large-scale solar PV energy sites in Fresno County that were located on existing contaminated lands, landfills, or mines (USEPA 2017a, 2017b).

This effort resulted in the identification of 195 contaminated land sites in Fresno County, only three of which were noted as suitable for large or utility scale PV solar development. None of the three sites is reported to have an estimated solar PV capacity potential greater than approximately 73 MW: the Orange Avenue Disposal Inc. site located at 3280 South Orange Avenue in Fresno has an estimated solar PV capacity potential of approximately 7 MW; the Southeast Regional Solid Waste Disposal Site located at 12716 Dinuba Avenue in Selma has an estimated solar PV capacity potential of approximately 22 MW; and the American Avenue Landfill site located at 18950 West American Avenue in Kerman has an estimated solar PV capacity potential of approximately 73 MW (USEPA 2017b). The American Avenue Landfill site also is insufficient in that the power line serving the site is scaled only for distribution at 69 kV (USEPA 2017b). These sites were eliminated from further consideration as inadequately sized or served to meet the Project objective of establishing a solar PV energy-generating facility of a sufficient size and configuration to produce approximately 400 MWac of electricity.

6.1.2 Alternative Solar Technology: Concentrated Solar

A concentrated solar (parabolic trough) power system was considered as a potential alternative to the Project. However, for the reasons discussed below, this type of system was not carried forward for detailed consideration. Concentrated solar power systems use reflective surfaces in large arrays to focus the sun's energy on a fixed point to produce intense heat from which electricity can be generated. Parabolic troughs concentrate sunlight onto individual units, each of which is equipped with receiver tubes filled with a heat transfer fluid. The transfer fluid is super-heated before being pumped to heat exchangers that transfer the heat to boil water and run a conventional steam turbine to produce electricity. Although concentrated solar power systems can store heated fluids

to deliver electricity even when the sun is not shining, these systems can cause environmental issues related to reflectivity, thermal plumes, and radar interference (FAA 2010).

The land required to develop a concentrated solar energy facility is comparable to that required for a PV project – approximately 6.2 acres per MWac for solar thermal relative to between 5.5 acres per MWac for fixed-tilt PV and 6.3 acres per MWac for single-axis tracker (National Renewable Energy Laboratory 2013). Use of a concentrated solar technology would meet most of the basic Project objectives; however, use of this technology would not avoid or substantially lessen any of the potential significant effects of the Project and could generate new significant impacts such as those associated with the use, transport, disposal of hazardous materials (the heat transfer fluid); greater water demand (to generate steam to power turbines connected to electrical power generators); and as a result of the solar thermal arrays' reflective surfaces, causing or contributing to substantial glint- or glare-related impacts. Accordingly, a concentrated solar power system alternative was not considered further.

6.1.3 Alternative Approaches: Conservation and Demand Side Management

Conservation and demand side management consists of a variety of approaches to reduce electricity use and shift electrical demand to times of the day when energy demand is lower. It includes increased energy efficiency and conservation, building and appliance standards, fuel substitution, and load management. Implementation of conservation and demand side management techniques could result in a reduction in demand thus reducing the need for new generation, and thereby serve the region's growing demand for power.

Increased energy efficiencies and reductions in energy demand would not meet Project objectives including the generation of approximately 400 MWac of renewable electricity, assisting the State in achieving its RPS and SB 32 GHG reduction goals by providing a significant new source of solar energy, and assisting the California utilities in meeting their obligations under the CPUC's Energy Storage Framework and Design Program by providing up to 400 MW of storage capacity. These alternative approaches were not carried forward for more detailed review because they would not meet most of the basic Project objectives.

6.2 Alternatives Evaluated in this EIR

6.2.1 Alternative 1: No Project Alternative

6.2.1.1 Description

Under the No Project Alternative, construction, operation, and decommissioning of the Project would not occur. The baseline environmental conditions for the No Project Alternative would remain the same as for the proposed Project. The Project site would continue to be used for low-yield agriculture production and/or left fallow. The Project site is designated as Agriculture in the Fresno County General Plan (2000) and is zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) (Fresno County 2011). If the Project were not approved, then other uses consistent with the AE-20 zoning designation could be made on one or more of the parcels that comprise the Project site (Fresno County 2011). Pursuant to Fresno County Ordinance Code Section 816, uses (among others) that are allowed by right without a permit relate to livestock, poultry, and crops; home occupations; agricultural products; apiaries; kennels; and welding and blacksmith shops. No

such competing proposals for site use are before the County. Accordingly, rather than speculate as to possible other uses, the analysis of the No Project Alternative in this Draft EIR assumes a no-development/no Project scenario where the existing agricultural use is continued as it exists under pre-Project conditions.

6.2.2.1 Impact Analysis

The No Project Alternative would involve no changes to the physical environment and thus would have no immediate adverse environmental effects.

This alternative would avoid the effects of the Project on agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, and utilities and service systems. All of the potential impacts associated with these issues would be mitigated to a level of less than significant with the Project as proposed, but under the No Project alternative there would be no physical changes whatsoever at the Project site. However, the proposed Project's beneficial impacts related to GHG emissions and energy would not occur under this alternative.

6.2.2 Alternative 2: Reduced Acreage

6.2.2.1 Description

Under Alternative 2, approximately 320 acres in the southeastern portion of the Project site would not be developed (see Figure 6-1, *Reduced Acreage Alternative*). This represents an approximately 8 percent reduction in the size of the Solar Facility. No solar panels would be constructed in that area, and perimeter chain link fencing would not enclose that section. Land within this area would continue to be used for low-yield agriculture production and/or left fallow. The Project otherwise would be as described in Section 2, *Project Description*. Notably, this alternative would generate the same amount of renewable energy (400 MWac) and energy storage capacity (400 MW) as the proposed Project, by reducing the area of open spaces and other areas on the site that would otherwise be used for storage, parking, or other purposes, and increasing the density/concentration of solar modules (also known as increasing the ground coverage ratio represented by the modules) across the site.

Under this alternative, the total disturbed acreage associated with the Solar Facility would be approximately 3,760 acres. The 320 acres removed from this alternative are designated as Farmland of Statewide Importance.

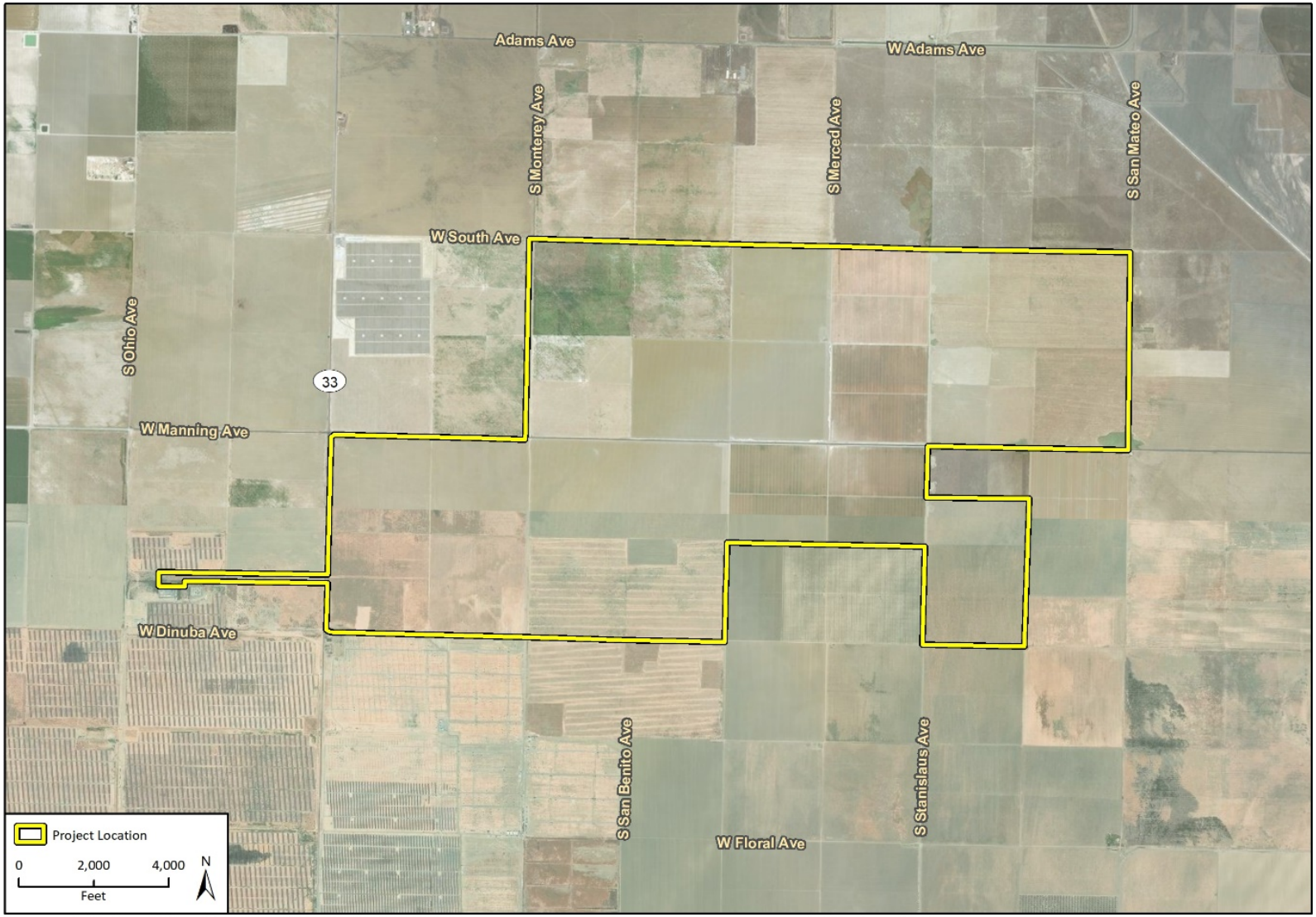
6.2.2.2 Impact Analysis

A brief summary of other CEQA issues under this alternative is presented below.

a. Aesthetics

While the Reduced Acreage Alternative would reduce disturbance in the southeastern portion of the Project site, solar development would occur on the remainder of the site and would be visible from public view points along West Manning Avenue. Under this alternative, impacts to the visual character and quality of public views of the Project site and its surroundings would be similar to the impacts of the Project and the impact conclusions regarding aesthetics would be the same: less than significant impacts to the existing visual character or quality of public views of the site and its

Figure 6-1 Reduced Acreage Alternative



surroundings, and regarding the generation of glare that could adversely affect daytime views in the area.

b. Agricultural Resources

Under the Reduced Acreage Alternative, approximately 320 acres in the southeastern portion of the Project site would not be developed. These 320 acres are designated as Farmland of Statewide Importance. Therefore, impacts to Farmland under this alternative would be reduced in comparison to the impacts of the Project. However, the Reduced Acreage Alternative Project site still includes 1,043 acres of land designated as Farmland of Statewide Importance. Similar to the proposed Project, the Reduced Acreage Alternative would result in a less-than-significant impact to agricultural resources.

c. Air Quality

Compared to the Project, the Reduced Acreage Alternative would result in 8 percent less surface disturbance. A reduction in solar development would consequentially result in a reduction in construction, operations, and decommissioning emissions. However, the Reduced Acreage Alternative would be expected to exceed SJVAPCD thresholds for NO_X, PM_{10}, and $PM_{2.5}$ emissions generated during construction, PM_{10} emissions generated during operation, and PM_{10} emissions during decommissioning, and would therefore conflict with SJVAPCD's air quality management plans. Like the proposed Project, Mitigation Measure AQ-1 would be required to reduce air quality impacts to a less than significant level.

Similar to the proposed Project, the Reduced Acreage Alternative would not expose sensitive receptors to substantial pollutant concentrations associated with construction dust, carbon monoxide hotspots, or toxic air contaminants. Impacts would be less than significant.

d. Biological Resources

Under the Reduced Acreage Alternative, the area of disturbance would be reduced by 320 acres. No solar panels or associated infrastructure would be constructed in that area and perimeter chain link fencing would not enclose that section. Land within this portion of the site would continue to be used as agricultural land. Existing (limited) foraging, denning, and other habitat value would be maintained on the approximately 320 acres. The Reduced Acreage Alternative would entail less surface disturbance, less loss of foraging habitat, less potential impact to special-status species, and less potential to interfere with the movement of wildlife, but the nature of the impacts would remain the same as they are for the Project, and the same mitigation measures, BIO-1(a) through BIO-1(f), BIO-3(a), and BIO-3(b), would be required to reduce potential impacts to biological resources on the remainder of the Project site to a less than significant level.

e. Cultural Resources

Compared to the Project, the Reduced Acreage Alternative would result in 8 percent less surface disturbance. The reduced disturbance area would result in similar but slightly reduced potential for disturbance of previously unknown cultural resources, including archaeological resources and human remains. However, the same mitigation measures, CR-1(a) and CR-1(b), would be required to reduce potential impacts to cultural resources to a less than significant level.

f. Energy

Compared to the Project, the Reduced Acreage Alternative would result in less surface disturbance, but the same number of panels would be installed and construction and decommissioning activities would require the same amount of fuel resources. The minimal amount of electricity required during the Reduced Acreage Alternative construction would remain offset by the generation of electricity from the Reduced Acreage Alternative panels. Overall, the impact conclusions would be the same as those identified for the Project and the Reduced Acreage Alternative would result in less than significant impacts to energy.

g. Geology and Soils

The Reduced Acreage Alternative would result in a reduction in the amount of construction disturbance, as well as a reduction in the quantity of some construction materials, such as pounds of gravel. As a result, there would be a reduction in the volume of soils that could become exposed to erosion and a reduction in the potential to encounter previously unknown significant fossil resources commensurate with the reduction in disturbance. Because the existing regulatory requirements including the NPDES Construction General Permit and the California Building Code with local amendments would still apply to this alternative and because Mitigation Measure GEO-2 would reduce this Alternative's potential significant impact of liquefaction hazards, the Reduced Acreage Alternative would result in similar impacts as the Project.

h. Greenhouse Gas Emissions

Compared to the Project, the Reduced Acreage Alternative would generate the same amount of GHG emissions during construction and decommissioning because the same number of panels would be installed. Similar to the Project, the Reduced Acreage Alternative would have less than significant impacts in regard to generation of GHG emissions and conflicts with plans, policies, or regulations adopted for the purpose of reducing GHG emissions. In addition, the Reduced Acreage Alternative would also generate the same amount of renewable electricity and create the same amount of energy storage capacity as the Project.

i. Hazards and Hazardous Materials

The Reduced Acreage Alternative would consist of less construction disturbance, and a reduction in the volume or quantity of some construction materials (e.g., pounds of gravel). As a result, there would be a reduction in the amount of hazardous materials required for construction, operation, and decommissioning, although the use of hazardous materials during the Project already is not substantial. Implementation of the BMPs required by the NPDES Construction General Permit, as well as implementation of a Project-specific HMBP as required by state laws and regulations and local requirements, would similarly apply to this alternative and would similarly reduce impacts to less than significant levels.

Like the proposed Project, construction activities could generate dust and expose sensitive receptors to potential health hazards associated with the *Coccidioides fungus* (Valley Fever). Impacts related to Valley Fever would be potentially significant but mitigable. Implementation of Mitigation Measures 3(a) through 3(d) would reduce potential impacts to less than significant.

Like the proposed Project, construction activities have the potential to encounter asbestos-containing materials, which could result in a significant hazard to the public or environment. Impacts would be potentially significant but mitigable. Similar to the proposed Project,

implementation of Mitigation Measure HAZ-5 would reduce potential impacts to less than significant.

Similar to the proposed Project, the Reduced Acreage Alternative would not directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires. Impacts would be less than significant.

Overall, the potential impacts of the Reduced Acreage Alternative would be slightly reduced compared to the Project, but with compliance with regulatory requirements and the mitigation measures, the impacts would be less than significant.

j. Hydrology and Water Quality

Under the Reduced Acreage Alternative, there would be no changes to existing drainage patterns on the 320-acre area, but the remainder of the Project site would be constructed similar to the proposed Project. While the solar panels would be spaced more closely together, the Reduced Acreage Alternative would result in the same amount of impervious surfaces. Due to the relatively small amount of impervious surfaces under the Reduced Acreage Alternative, as compared to the overall perviousness of the site; the existing flat terrain of the site; and the use of BMPs to maintain the existing drainage patterns as much as possible, similar to the Project, the Reduced Acreage Alternative would not substantially reduce groundwater infiltration rates associated with precipitation and impacts would be less than significant. The potential to increase runoff or result in flooding or increased erosion downstream would also be similar when compared to the proposed Project, and result in a less-than-significant impact.

Like the proposed Project, the Reduced Acreage Alternative could degrade water quality due to increased erosion and sedimentation associated with temporary ground-disturbing activities. Construction or operation of the Reduced Acreage Alternative could similarly result in accidental releases of contaminants that could degrade water quality. However, compliance with existing federal and local requirements discussed in Section 4.10, *Hydrology and Water Quality*, would reduce potential impacts to less than significant.

Like the proposed Project, this alternative would require water for dust suppression purposes during construction, as well as water to wash the PV modules and support overall operations at the site. While the quantities required would be somewhat less under the Reduced Acreage Alternative, it is presumed that this alternative would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin, as described for the proposed Project. This impact would be less than significant.

Like the proposed Project, the Reduced Acreage Alternative has the potential to be inundated in a 100-year flood event, which could risk release of pollutants from the Solar Facility. Impacts would be incrementally reduced compared to the proposed Project due to the 8 percent reduction in project size; however, the impact would remain the same: less than significant with Mitigation Measure HWQ-4.

k. Land Use and Planning

Under the Reduced Acreage Alternative, the Project size would be reduced by approximately 320 acres. This Alternative would not physically divide an established community and would not conflict

with any applicable land use plan designed to mitigate environmental effects. Therefore, similar to the proposed Project, this Alternative would have no impact with regard to Land Use and Planning.

l. Noise

Under the Reduced Acreage Alternative, the Project acreage would be reduced by approximately 320 acres. Compared to the Project, the Reduced Acreage Alternative would result in less surface disturbance which would result in a similar but slight reduction in Project-related noise and vibration. Like the proposed Project, construction and decommissioning of the Reduced Acreage Alternative would involve the use of heavy equipment that would result in a temporary noise level increase that could disturb nearby sensitive receptors. Similar to the proposed project, while temporary construction noise may exceed the daytime L_{eq} limit of 50 dBA, based on the Fresno County Exterior Noise Level Standard, the County of Fresno Noise Control Ordinance exempts construction activity noise from standard exterior noise exposure limits. Therefore, like the proposed Project, the Reduced Acreage Alternative would have less-than-significant operational noise and vibration impacts.

m. Transportation

Under the Reduced Acreage Alternative, the overall Project size would decrease by approximately 8 percent, but the same number of panels would be installed. Due to the reduced size of this alternative, VMT generated by its construction and decommissioning would be somewhat smaller than VMT generated by the Project. Impacts associated with the Reduced Acreage Alternative would be incrementally less than those associated with the Project. Therefore, like the proposed Project, transportation impacts would be less than significant.

n. Utilities and Service Systems

Compared to the Project, the Reduced Acreage Alternative would result in less surface disturbance, but the same number of solar panels . Similar to the Project, the Reduced Acreage Alternative would have less than significant impacts in regards to wastewater treatment capacity, solid waste infrastructure capacity, and conflicts with solid waste reduction statutes and regulations. The Reduced Acreage Alternative would require similar water, wastewater, and stormwater facilities as the Project and would therefore also result in similar but impacts related to the construction of those facilities. The Reduced Acreage Alternative would require incrementally less water for construction and decommissioning activities due to less surface disturbance, but a similar amount for operations due to the same number of panels as the Project. Overall, the potential impacts of the Reduced Acreage Alternative would remain the same: less than significant.

6.3 Environmentally Superior Alternative

As analyzed and documented above, and in Sections 4.1 through 4.15, neither the Project, nor the Reduced Acreage Alternative, nor the No Project Alternative would cause a significant and unavoidable impact to any environmental resource. All impacts of the Project and the Reduced Acreage Alternative would be less than significant or less than significant with mitigation incorporated.

The results of the comparative analysis of each of the resource areas analyzed above, and in Sections 4.1 through 4.15, are set forth in Table 6-1, which compares the conclusions of the impact analyses for the No Project Alternative and Reduced Acreage Alternative against the conclusions for

the Project. The comparative analysis summarized in Table 6-1 shows that the No Project Alternative would be environmentally superior to the Project in all impact areas except for GHG Emissions, Land Use and Planning, and Energy. Under the Reduced Acreage Alternative all impact resource areas would be similar but slightly reduced compared to the Project; this would not affect significance determinations, which would remain the same as for the Project. For GHG emissions and Energy, the Reduced Acreage Alternative would be comparable to the Project.

Table 6-1 Comparison of Impacts of Alternatives to Proposed Project

Issue	Project Impact Classification	Alternative 1: No Project	Alternative 2: Reduced Acreage
Aesthetics	Less than Significant	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Agricultural Resources	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Air Quality	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Biological Resources	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Cultural Resources	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Energy	Less than Significant	Inferior to the proposed Project (increased level of impact)	Similar level of impact to the proposed Project
Geology and Soils	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Greenhouse Gas Emissions	Less than Significant and Beneficial	Inferior to the proposed Project (increased level of impact)	Similar level of impact to the proposed Project
Hazards and Hazardous Materials	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Hydrology and Water Quality	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Land Use and Planning	No Impact	Similar level of impact to the proposed Project	Similar level of impact to the proposed Project

Issue	Project Impact Classification	Alternative 1: No Project	Alternative 2: Reduced Acreage
Noise	Less than Significant	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Transportation	Less than Significant	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project
Utilities and Service Systems	Less than Significant with Mitigation Incorporated	Superior to the proposed Project (reduced level of impact)	Similar level of impact to the proposed Project

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. CEQA Guidelines Section 15126.6(a) places emphasis on alternatives that "avoid or substantially lessen the significant effects" of a project; distinctions between impacts that are less than significant or are mitigated to less than significant are typically not considered when selecting an environmentally superior alternative. However, no significant and unavoidable effects were identified for the Project.

The No Project Alternative is considered the environmentally superior alternative for CEQA purposes because it would avoid all impacts of the Project and would not create any new significant impacts of its own, even though it would have a less beneficial impact than that of the Project on GHG emissions and energy. The No Project Alternative would fail to meet the basic objectives of the Project, including, but not limited to, the generation of renewable solar electricity from proven technology and construction of a project that would assist the State in achieving RPS and SB 32 GHG reduction goals.

Since the environmentally superior alternative is the No Project Alternative, the EIR also must identify an environmentally superior alternative from among the other alternatives. There are no significant and unavoidable impacts that cannot be reduced to a less-than-significant level under the Project or Reduced Acreage Alternative. The Reduced Acreage Alternative would incrementally reduce impacts in most issue areas from the 320 fewer acres of disturbance, but the impact conclusions would be the same as the Project.

The County has initially identified the Project as the environmentally superior alternative because no alternative was identified that reduces any significant impacts and the Project by definition meets the Project objectives. Nonetheless, County decision-makers may weigh the relative benefits of the alternatives differently and with additional information received in or developed during the project approval process reasonably could reach a different decision.

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