HEARTLAND SOLAR PROJECT

Draft Environmental Impact Report

EIR No. 7564; CUP No. 3630
State Clearinghouse No. 2022100609

Prepared for
County of Fresno Department of
Public Works and Planning

September 2025

ESA



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TABLE OF CONTENTS

Heartland Solar Project
Draft Environmental Impact Report

Page

Executive Summary ES-1
ES.1 Introduction ES-1
ES.2 Project Site ES-2
ES.3 Purpose and Use of the Draft EIR ES-2
ES.4 Project Objectives ES-5
ES.5 Permits and Approvals ES-5
ES.6 Overview of Project Impacts ES-5
ES.7 Overview of Alternatives to the Project ES-30
ES.8 Environmentally Superior Alternative ES-32
ES.9 Areas of Controversy ES-32
ES.10 Issues to be Resolved ES-33
ES.11 References ES-33

Chapter 1. Introduction 1-1
1.1 Project Overview 1-1
1.2 Purpose and Uses of this Document by Agencies 1-1
1.3 Public Involvement and the CEQA Process 1-3

Chapter 2. Project Description 2-1
2.1 Project Overview 2-1
2.2 Location of the Project Site 2-1
2.3 Existing Land Uses 2-6
2.4 Project Objectives 2-6
2.5 Description of Project Components 2-7
2.6 Permits and Approvals 2-22
2.7 References 2-22

Chapter 3. Environmental Analysis 3.1-1
3.1 Introduction to Environmental Analysis 3.1-1
3.2 Aesthetics 3.2-1
3.3 Agriculture and Forestry Resources 3.3-1
3.4 Air Quality 3.4-1
3.5 Biological Resources 3.5-1
3.6 Cultural Resources and Tribal Cultural Resources 3.6-1
3.7 Energy 3.7-1
3.8 Geology, Soils, and Paleontological Resources 3.8-1
3.9 Greenhouse Gas Emissions 3.9-1
3.10 Hazards and Hazardous Materials 3.10-1
3.11 Hydrology and Water Quality 3.11-1
3.12 Land Use and Planning 3.12-1
3.13 Mineral Resources 3.13-1

3.14 Noise and Acoustics 3.14-1
3.15 Population and Housing 3.15-1
3.16 Public Services 3.16-1
3.17 Recreation 3.17-1
3.18 Transportation 3.18-1
3.19 Utilities and Service Systems 3.19-1
3.20 Wildfire 3.20-1

Chapter 4. Alternatives 4-1
4.1 Alternatives Development and Screening Process 4-1
4.2 Alternatives Rejected from Detailed Consideration 4-4
4.3 Alternatives Evaluated in Detail in this EIR 4-7
4.4 Comparison of Alternatives 4-10
4.5 Environmentally Superior Alternative 4-10
4.6 References 4-34

Chapter 5. Report Preparation 5-1

Appendices

A. Scoping Report A-1
B. Project Description B-1
B1 Pest Management Plan
B2 Reclamation Plan
C. Agricultural Resources C-1
D. Air Quality and Greenhouse Gas Emissions D-1
D1 Air Quality and Greenhouse Gas Emissions Technical Report
D2 BESS Charging Memorandum
E. Biological Resources E-1
E1 Biological Resources Reconnaissance Report
E2 Swainson's Hawk Survey Report
E3 Biological Resources Report
E4 Analysis of Impacts to Swainson's Hawk Nesting and Foraging Habitat
E5 Burrowing Owl Survey Report
F. Tribal Consultation F-1
F1 Letters Inviting Consultation
F2 Confirmation of Conclusion of Formal Consultation
G. Energy Calculations G-1
H. Phase I Site Assessment H-1
I. Land Use and Planning I-1
I1 Consistency with Fresno County General Plan
I2 Consistency with Fresno County's Solar Facility Guidelines
J. Heartland Solar Project Operational Noise Prediction Technical Memorandum J-1
K. Traffic Impact Study K-1
L. Water Supply Assessment L-1
M. Recipients of the Draft EIR M-1

Figures

Figure ES-1 Regional Location ES-3
Figure ES-2 Project Site ES-4
Figure 2-1 Regional Location 2-3
Figure 2-2 Project Site 2-4
Figure 2-3 Site Plan 2-8
Figure 2-4 Solar Facility Substation 2-10
Figure 3.1-1 Cumulative Projects 3.1-8
Figure 3.2-1 Viewpoint Map 3.2-10
Figure 3.2-2 Viewpoint 1 ..... 3.2-14
Figure 3.2-3 Viewpoint 2 ..... 3.2-15
Figure 3.2-4 Viewpoint 3 ..... 3.2-16
Figure 3.2-5 Viewpoint 4 ..... 3.2-17
Figure 3.3-1 FMMP Important Farmland in the Project Vicinity 3.3-2
Figure 3.5-1 Vegetation Communities and Land Cover 3.5-3
Figure 3.5-2 Burrowing Owl and Swainson's Hawk Nest Locations 3.5-6
Figure 3.5-3 Nest Buffer for Swainson's Hawk 3.5-20
Figure 3.11-1 Surface Water Bodies 3.11-3
Figure 3.14-1 Typical A-Weighted Sound Levels 3.14-3
Figure 3.14-2 Sound Level Measurement (SLM) and Sensitive Receptor Location Fresno County, California 3.14-6
Figure 3.14-3 Community Noise Environments 3.14-11
Figure 3.18-1 Local Roadways 3.18-2

Tables

Table ES-1 Permits and Approvals ES-6
Table ES-2 Summary of Impacts and Mitigation Measures ES-10
Table 2-1 Project Components 2-2
Table 2-2 Project Parcel Details 2-5
Table 2-3 Project Construction Equipment 2-18
Table 2-4 Permits and Approvals 2-22
Table 3.1-1 Cumulative Projects List 3.1-5
Table 3.4-1 Air Quality Data Summary in the Project Area 3.4-6
Table 3.4-2 Ambient Air Quality Standards and Air Basin Attainment Status 3.4-7
Table 3.4-3 SJVAPCD Rule 8021 Measures Other than Administrative and District Notification Requirements Applicable to the Project 3.4-14
Table 3.4-4 Control Measure Options for Construction, Excavation, Extraction, and Other Earth Moving Activities 3.4-15
Table 3.4-5 SJVAPCD Air Quality Thresholds of Significance – Criteria Air Pollutants 3.4-17
Table 3.4-6 Maximum Annual Construction Emissions 3.4-24
Table 3.4-7 Average Daily Construction Emissions 3.4-25
Table 3.4-8 Construction Level 1 AAQA 3.4-25
Table 3.4-9 Estimated Annual Operational Emissions 3.4-27
Table 3.4-10 Maximum Daily Operational Emissions 3.4-27
Table 3.4-11 Construction-Related Health Risk Summary for the Project 3.4-29
Table 3.7-1 PG&E-Owned Electricity Generating Sources (2022) 3.7-2
Table 3.7-2 PG&E 2022 Renewable Energy Sources 3.7-3
Table 3.7-3 Electricity Consumption by Sector in PG&E Service Area (2021) 3.7-3
Table 3.9-1 Estimated Annual Project Construction and Decommissioning Greenhouse Gas Emissions 3.9-11

Table 3.9-2 Estimated Annual Project Operational Greenhouse Gas Emissions 3.9-12
Table 3.9-3 Estimated Net Annual Project Greenhouse Gas Emissions 3.9-12
Table 3.10-1 Federal Laws and Regulations Related to Hazardous Materials Management..... 3.10-5
Table 3.10-2 State Laws and Regulations Related to Hazardous Materials Management..... 3.10-7
Table 3.14-1 Noise Sensitive Receptor Locations 3.14-5
Table 3.14-2 Existing Noise levels (DBA)..... 3.14-7
Table 3.14-3 Federal Transit Administration Detailed Assessment Criteria for Construction Noise 3.14-8
Table 3.14-4 OSHA-Permissible Noise Exposure Standards 3.14-9
Table 3.14-5 Fresno County Exterior Noise Level Standards..... 3.14-12
Table 3.14-6 Outdoor Construction Noise Levels by Phase at Closest Noise-Sensitive Receptors to the Solar Facility 3.14-16
Table 3.14-7 Nighttime Outdoor Construction Noise Levels by Phase at Closest Noise-Sensitive Receptors to the Solar Facility..... 3.14-17
Table 3.14-8 Aggregate Noise Model Results for the Solar and BESS Facility Compared to Ambient L_{eq} Levels..... 3.14-19
Table 3.14-9 Aggregate Noise Model Results for the Solar and BESS Facility Compared to Ambient L_{50} Levels..... 3.14-19
Table 3.14-10 Projected Construction Vibration Levels –Solar Facility 3.14-21
Table 3.15-1 Regional Population Estimates, 2000–2022..... 3.15-2
Table 3.15-2 2022 Regional Housing Estimates..... 3.15-3
Table 3.17-1 Recreation Facilities Nearest to the Project Site..... 3.17-1
Table 3.18-1 Trip Generation for Project Construction 3.18-8
Table 3.18-2 Average Daily Traffic during Peak of Project Construction 3.18-11
Table 4-1 Screening Summary: Alternative Sites 4-5
Table 4-2 Screening Summary: Potential Brownfield Sites..... 4-6
Table 4-3 Screening Summary: No Project Alternative..... 4-8
Table 4-4 Screening Summary: Alternative 1 4-8
Table 4-5 Screening Summary: Alternative 2 4-9
Table 4-6 Summary of Impacts of the Project and Alternatives 4-12

EXECUTIVE SUMMARY

ES.1 Introduction

Heartland Solar 1, LLC (Applicant), a wholly-owned indirect subsidiary of Clearway Energy Group LLC, proposes to construct, operate, maintain, and decommission the *Heartland Solar Project*, which consists of renewable photovoltaic (PV) solar energy generation and battery energy storage system facilities. Proposed facilities would generate approximately 300 megawatts alternating current (MW_{AC}) of solar PV energy and have capacity to store up to 300 MW of energy on approximately 2,362 acres of private land in western Fresno County. These facilities would interconnect to the regional electrical grid via an electrical generation-tie (gen-tie) line between the solar facility and the existing Tranquillity Switching Station, which is located approximately 1.25 miles south of the solar and energy storage facility site. The Tranquillity Switching Station is owned and operated by the Pacific Gas and Electric Company (PG&E), which is subject to the jurisdiction and oversight of the California Public Utilities Commission (CPUC). PG&E also would conduct other necessary infrastructure work to support interconnection of the Heartland Solar Project. Infrastructure and other improvements to be constructed, operated, and maintained by PG&E to support the Heartland Solar Project are referred to as the *PG&E Components*. The Heartland Solar Project and the PG&E Components collectively are referred to in this document as the *Project*. Distinctions between the Heartland Solar Project and the PG&E Components are made as needed for clarity.

The County of Fresno (County) is serving as the lead agency pursuant to the California Environmental Quality Act (CEQA; Public Resources Code Section 21000 et seq.) and its implementing regulations (the CEQA Guidelines, 14 California Code of Regulations [Cal. Code Regs]. Section 15000 et seq.). The County has prepared this Draft Environmental Impact Report (EIR No. 7564) to document its analysis of the direct, indirect, and cumulative environmental impacts of the Project and alternatives to the Project, and to identify mitigation measures to avoid or reduce impacts that have been identified as *significant* for purposes of CEQA.[1] This EIR is an informational document. Its purpose is not to recommend either approval or denial of the Project, but rather to inform decision-makers and members of the public of the potential environmental consequences of the Project. Because environmental considerations are but one of multiple factors that may be taken into consideration when an agency is deciding whether to approve a proposal, the County will consider factors outside the scope of CEQA when it decides whether to approve the requested authorizations.

[1] Public Resources Code section 21068 and CEQA Guidelines section 15382 define *significant effect on the environment* 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."

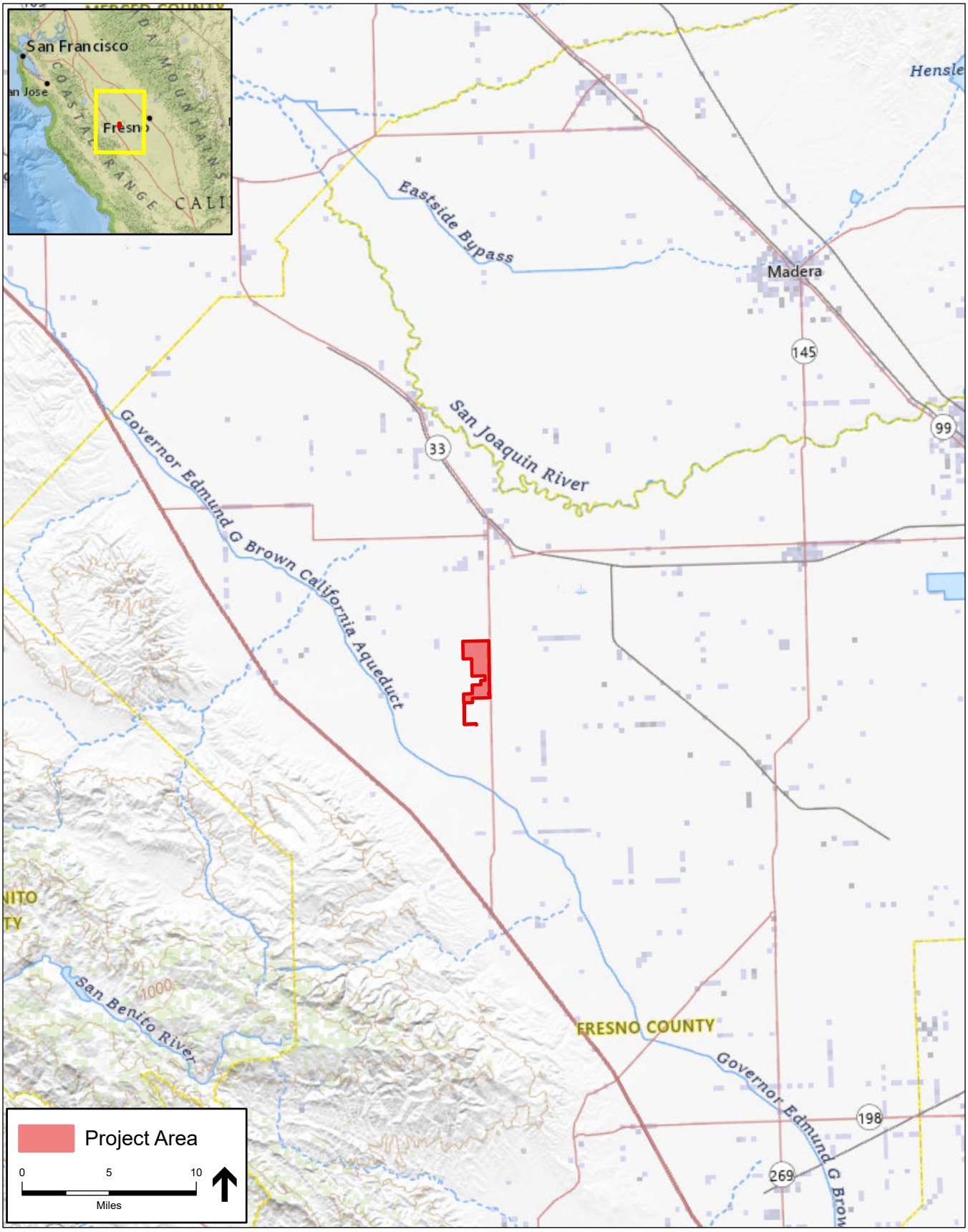
ES.2 Project Site

The Project site is located approximately 6 miles southwest of the City of Mendota, 10 miles east of Interstate 5 (I-5), to the east of S. San Bernardino and Los Angeles avenues, south of W. American Avenue, west of State Route (SR) 33 (also called S. Derrick Avenue), 0.5 mile north of W. Manning Avenue, and 1.25 miles north of PG&E's Tranquillity Switching Station. The Project site is located across SR 33 from the existing Adams East solar facility and immediately north of the approved Luna Valley solar facility. The Tranquillity Switching Station is located near the northeast corner of the intersection of W. Dinuba Avenue and S. Ohio Avenue, within the boundaries of the Tranquillity Solar Generating Facility. See **Figure ES-1**, *Regional Location*, and **Figure ES-2**, *Project Site.*

ES.3 Purpose and Use of the Draft EIR

The purpose of EIR No. 7564 is to inform decision-makers and members of the public about the potential environmental impacts of the Project. The County has the primary responsibility to approve, conditionally approve, or deny the Project and is the lead agency for purposes of CEQA. Other agencies that have discretionary permitting authority over aspects of the Project or that have responsibility for resources held in trust for the people of the State of California (*responsible agencies* and *trustee agencies*, respectively) also may rely on this EIR in deciding whether to approve permits or issue other approvals for the Project.

A portion of the generation-tie line and improvements at the existing Tranquillity Switching Station would be constructed, owned, and operated by PG&E, which is under the exclusive regulatory authority of the CPUC. PG&E's facilities are analyzed in this CEQA document because, combined with the Heartland Solar Project, they constitute the whole of the project being evaluated under CEQA. Nevertheless, PG&E's interconnection facilities are not part of the unclassified conditional use permit application before the County and would not be authorized by the County's decision. For this reason, mitigation measures identified in this EIR are not applicable to PG&E's scope of work. Instead, as proposed, the impacts from the PG&E Components have been evaluated with PG&E's Construction Measures incorporated, which are designed to keep any environmental effects of PG&E's scope of work to a level that would be less than significant. The CPUC may utilize and incorporate this EIR, including all of the applicable measures, by reference in the authorizing documents for the PG&E facilities.

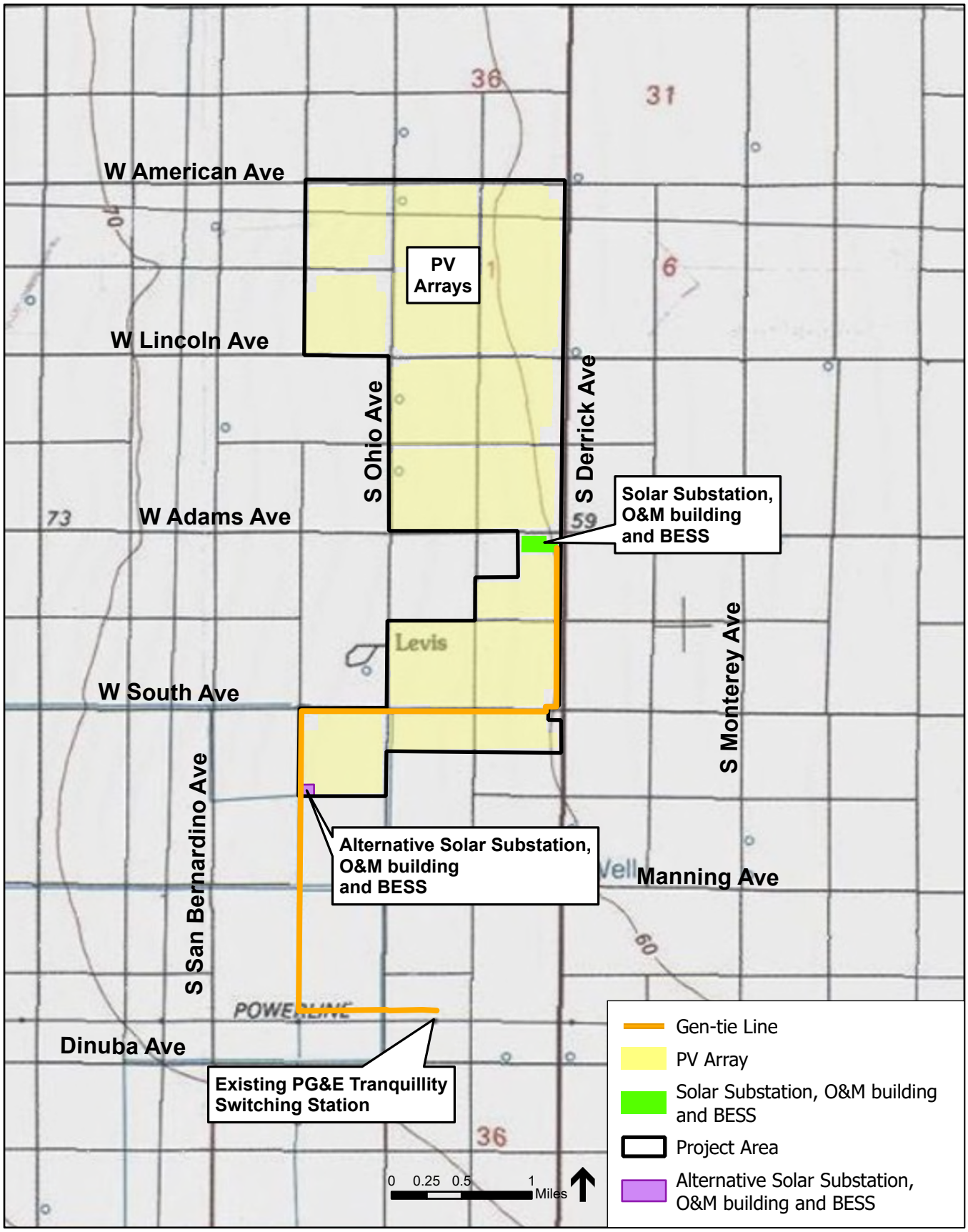


SOURCE: USGS 7.5' Topographic Quadrangle (Coit Ranch, CA; Levis, CA

Heartland Solar Project

Figure ES-1

Regional Location



SOURCE: USGS 7.5' Topographic Quadrangle (Coit Ranch, CA; Levis, CA)

Heartland Solar Project

Figure ES-2
Project Site

ES.4 Project Objectives

The Applicant has identified the following objectives for the Project:

1. Establish a PV renewable solar energy power-generating facility of a sufficient size and configuration to produce up to approximately 300 MW (AC) of electricity in a cost-competitive manner.
2. Establish an energy storage system of a sufficient size and configuration to store up to approximately 300 MW (AC) of electricity for at least four-hour discharge in a cost-competitive manner.
3. Assist California load-serving entities in meeting their obligations under California's Renewable Portfolio Standard Program and Senate Bill 100, which calls for 60 percent of all electricity sold in California to come from renewable sources by 2030, and 100 percent by 2045.
4. Assist California load-serving entities in meeting their obligations under the CPUC's Energy Storage Framework and Design Program.
5. Provide for the economically viable, commercial financeable, and environmentally beneficial use of lands.
6. Develop a renewable PV solar energy and energy storage project in proximity to transmission infrastructure in order to minimize environmental impacts.
7. Create jobs and tax revenue for Fresno County.

ES.5 Permits and Approvals

The permits or other approvals identified in **Table ES-1**, *Permits and Approvals*, may be required to construct, operate, maintain, and decommission some or all components of the Project.

ES.6 Overview of Project Impacts

Sections 3.2 through 3.20 in Chapter 3, *Environmental Analysis,* describe the environmental and regulatory setting; analyze direct, indirect, and cumulative impacts of the Project; and identify mitigation measures designed to avoid or reduce potential significant impacts. All of the resource areas in the CEQA Guidelines Appendix G Environmental Checklist were studied: Aesthetics; Agriculture and Forest Resources; Air Quality; Biological Resources; Cultural and Tribal Cultural Resources; Energy; Geology, Soils and Paleontological Resources; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use and Planning; Mineral Resources; Noise and Acoustics; Population and Housing; Public Services; Recreation; Transportation; Utilities and Service Systems; and Wildfire.

TABLE ES-1
PERMITS AND APPROVALS

Project Component	Permits and Approvals
Solar and Energy Storage Facilities	• County approval of Unclassified Conditional Use Permit No. 3630 • County approval to authorize abandonment or vacation of segments of unimproved County roads, including portions At the project level and cumulatively, the Project could, due to activities during nighttime hours, generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance (Impact 3.14-1 and Impact 3.14-1c in Section 3.14). of S. Ohio Avenue, W. Lincoln Avenue and W. South Avenue • County approvals also may be required if work is to be performed within a County right-of-way (i.e., an encroachment permit from the Road Maintenance and Operations Division of the Department of Public Works and Planning) along a County right-of-way (i.e., a franchise agreement) or for the erection, demolition, or conversion of any building or structure (i.e., building and grading permits). • San Joaquin Valley Unified Air Pollution Control District approval of Indirect Source Review, stationary and/or mobile sources may be required. San Joaquin Valley Air Pollution Control District also may require submittal of a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities involving disturbance of at least 1 acre. Permits from the air district may be required for emergency diesel generators for the backup energy for the battery energy storage system. • California Department of Fish and Wildlife approval of a lake and streambed alteration agreement regulatory authority (Fish and Game Code Section 1600 et seq.) and/or incidental take permit under the California Endangered Species Act (Fish and Game Code Section 2050 et seq.) may be obtained. • U.S. 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. • If project features, including electrical facilities, would cross the Westland Water District's (WWD) distribution system laterals 6L, 7L, or 8L, then compliance with WWD's requirements for crossing a District lateral easement would be required. Since the WWD pipeline facilities are also within United States Bureau of Reclamation (USBR) easements, then approval from USBR would also be required in the form of a Letter of No Objection.
PG&E Components	• California Public Utilities Commission (CPUC) issuance of an Advice Letter pursuant to General Order 131-E authorizing PG&E to proceed with construction of the PG&E-owned portion of the generation-tie line.

ES.6.1 Potential Significant Impacts

As analyzed in Chapter 3, *Environmental Analysis,* and shown in **Table ES-2**, *Summary of Impacts and Mitigation Measures*, the Project would cause a potential significant impact to nine resource areas. The significance of all of these impacts would be reduced to a less-than-significant level with the implementation of one or more mitigation measures.

a. **Biological Resources**: The Project could have a substantial adverse effect, either directly or through habitat modifications, both at the Project level and cumulatively on: San Joaquin kit fox (*Vulpes macrotis mutica*), which is federally listed as endangered and state-listed as threatened; burrowing owl (*Athene cunicularia*), a candidate species; American badger (*Taxidea taxus*), a California Species of Special Concern; and nesting birds, including Swainson's hawk (*Buteo swainsoni*), a state-listed threatened species, and other raptors (see Impact 3.5-1 in Section 3.5). The Project could conflict (both at the Project level and cumulatively) with Fresno County General Plan goals or policies protecting biological resources, such as protecting fish and wildlife habitat (Impact 3.5-3 and Impact 3.5-3c).

b. **Cultural and Tribal Resources**: The Project could result in a significant impact due to an inadvertent discovery of cultural resources, potentially including historical or archaeological resources (Impact 3.6-1 in Section 3.6), previously unidentified human remains (Impact 3.6-2), and/or archaeological resources that also are tribal cultural resources (Impact 3.6-3).

c. **Geology Soils and Paleontological Resources**: At the project level and cumulatively, the Heartland Solar Project and PG&E Components could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Impact 3.8-6, 3.8-7, 3.8-6c, and 3.8-7c in Section 3.8).

d. **Hazards**: The Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials pursuant to cleanup of illegal dump sites, unless that work is completed before the Applicant obtains site control of the affected area (Impact 3.10-1 in Section 3.10).

e. **Hydrology and Water Quality**: At the project level and cumulatively, the Project could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality (Impact 3.11-1 and 3.11-1c in Section 3.11).

f. **Noise**: At the project level and cumulatively, the Project could, due to activities during nighttime hours, generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance (Impact 3.14-1 and Impact 3.14-1c in Section 3.14).

g. **Transportation**: At the project level and cumulatively, the Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway facilities (Impact 3.18-1 and Impact 3.18-1c) and could result in inadequate emergency access (Impact 3.18-4, and Impact 3.18-4c).

h. **Utilities and Service Systems**: At the project level, the Project could result in adverse impacts related to construction of stormwater facilities (Impact 3.19-2).

i. **Wildfire**: At the project level and cumulatively, the Project could impair an adopted emergency response plan or emergency evacuation plan (Impact 3.20-1 and Impact 3.20-1c in Section 3.20).

ES.6.2 Significant Unavoidable Impacts

Section 15126.2(a) 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. As analyzed in Chapter 3, *Environmental Analysis,* the Project would cause no significant unavoidable impacts.

ES.6.3 Significant Irreversible Environmental Changes

CEQA's requirement to analyze irretrievable commitments of resources applies only to the adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency; a local agency formation commission's adoption of a resolution making determinations; and projects that require an environmental impact statement to be prepared pursuant to the National Environmental Policy Act of 1969 (Public Resources Code Section 21100.1; CEQA Guidelines Section 15127). Although CEQA does not require an analysis of irretrievable commitments of resources for this

Project, this EIR nonetheless evaluates the Project's proposed irretrievable commitments of nonrenewable resources to assure that they are justified.

Section 15126.2(d) of the CEQA Guidelines explains that a large commitment of nonrenewable resources that occurs during the initial and continued phases of a project may be irreversible because such a commitment makes removal or nonuse thereafter unlikely, thus generally committing future generations to similar uses. Irreversible damage also can result from environmental accidents associated with a project.

The buildout of the Project would consume and irreversibly commit small quantities of nonrenewable resources including some water, electricity, and fossil fuels. However, for the duration of its operation, the Project would result in a substantial net benefit with respect to nonrenewable resources because of the amount of renewable energy that would be generated. The small amounts and rates of consumption of nonrenewable resources would not result in significant unavoidable environmental impacts or the unnecessary, inefficient, or wasteful use of energy over the long-term. See Section 3.7, *Energy*, and Section 3.9, *Greenhouse Gas Emissions*, for details. Compliance with all applicable building codes, as well as County policies and the mitigation measures identified in this EIR, would help ensure that natural resources are conserved to the extent feasible. As explained in Section 3.10, *Hazards and Hazardous Materials*, the Project has a low potential to result in a significant impact from an accidental release that could cause irreversible environmental damage.

Following Project decommissioning and site restoration, all surface and subsurface Project infrastructure (to a depth of up to 3 feet below ground surface) would be removed. See Appendix B2, *Preliminary Closure, Decommissioning, and Reclamation Plan*, which contains details. Any use consistent with the General Plan and zoning designations of the Project site could resume at that time. Accordingly, Project-related site disturbance would not commit future generations to uses similar to the Project.

ES.6.4 Growth-Inducing Impacts

Section 15126.2(e) of the CEQA Guidelines requires a discussion of the ways in which a project "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas)." Project-caused population increases could tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects.

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. It is expected that an average of 375 workers would be onsite to construct the Project, with a maximum of 625 workers at the peak of construction. The existing construction labor pool in Fresno County is

sufficient for meeting Project needs.[2] Following construction, the Project would typically require approximately three staff members to be onsite to conduct periodic, routine visual inspections and minor repairs. Larger crews of up to 10 workers would be required to perform other tasks such as equipment maintenance or replacement. Decommissioning and site restoration activities are expected to require a smaller workforce than construction; decommissioning and site restoration-related activities are expected to take a year or more to complete according to the Project's Reclamation Plan. Because construction and decommissioning are temporary, and because the necessary number of workers could be supplied by the existing available labor pool, the Project is unlikely to cause substantial numbers of people to relocate to Fresno County. Therefore, this Project would not result in a large increase in employment levels that would significantly induce growth.

It is expected that construction workers would commute to the Project site instead of relocating to Fresno County; however, even if all workers were to migrate into Fresno County, the existing available housing supply could accommodate them without requiring new construction.[3] Therefore, the Project is not expected to induce population growth, the housing and provision of services for which could cause significant adverse environmental impacts.

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. 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.

ES.6.5 Summary of Impacts and Mitigation Measures

Table ES-2 summarizes the environmental impacts of the Project and recommended mitigation measures that, if adopted, would avoid or substantially reduce potential significant impacts of the Project. For five of the resource areas considered under CEQA—Land Use and Planning, Mineral Resources, Population and Housing, Public Services, and Recreation—no impact would occur relative to any of the CEQA Guidelines Appendix G Environmental Checklist considerations. Therefore, these resource areas are not included in Table ES-2. The analysis of each Project impact is provided on a resource-by-resource basis in Chapter 3.

[2] According to the State of California's Employment Development Department's Labor Market Information Division, "The unemployment rate in Fresno County was 5.9 percent in August 2022, up from a revised 5.7 percent in July 2022, and below the year-ago estimate of 8.8 percent. This compares with an unadjusted unemployment rate of 4.1 percent for California and 3.8 percent for the nation during the same period." (California Employment Development Department 2022).

[3] Fresno County's vacancy rate for residential rentals is lower than the national average: 2.3 percent compared to 5.6 percent nationwide (iProperty Management 2022). Based on an Apartments.com search conducted October 10, 2022, 1,304 available rental units were available in Fresno County (Apartments.com 2022).

TABLE ES-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Aesthetics		
Impact 3.2-1: The Heartland Solar Project would not substantially degrade the existing visual character or quality of public views of the Project site and its surroundings.	None required.	Less-than-Significant Impact
Impact 3.2-2: The Heartland Solar Project would not create new sources of light and glare that would adversely affect day or nighttime views in the area.	None required.	Less-than-Significant Impact
Impact 3.2-3: The PG&E Components would affect aesthetic resources.	None required.	Less-than-Significant Impact
Impact 3.2-1c: The Heartland Solar Project would not cause a cumulatively considerable contribution to a significant cumulative effect due to substantial degradation of the existing visual character or quality of public views of the facility site or its surroundings.	None required.	Less-than-Significant Impact
Impact 3.2-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to the creation of new sources of light or glare that would adversely affect day or nighttime views in the area.	None required.	Less-than-Significant Impact
Impact 3.2-3c: The PG&E Components would not cause a cumulatively considerable contribution to a significant cumulative effect on aesthetic resources.	None required.	Less-than-Significant Impact
Agriculture and Forestry Resources		
Impact 3.3-1: The Heartland Solar Project would involve changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.	None required.	Less-than-Significant Impact
Impact 3.3-1c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to changes caused in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Air Quality		
Impact 3.4-1: Criteria pollutant emissions generated by the Heartland Solar Project could conflict with the SJVAPCD's air quality plans.	None required.	Less-than-Significant Impact
Impact 3.4-2: The Heartland Solar Project would result in net increases of criteria pollutants for which the Project region is non-attainment under federal and/or state ambient air quality standards.	None required.	Less-than-Significant Impact
Impact 3.4-3: The Heartland Solar Project could expose sensitive receptors to substantial pollutant concentrations.	None required.	Less-than-Significant Impact
Impact 3.4-4: The Heartland Solar Project's ground-disturbing activities could expose sensitive receptors to the risk of contracting Valley Fever.	None required.	Less-than-Significant Impact
Impact 3.4-5: The Heartland Solar Project could generate odor or dust emissions.	None required.	Less-than-Significant Impact
Impact 3.4-6: The PG&E Components would affect air quality.	None required.	Less-than-Significant Impact
Impact 3.4-1c: Criteria pollutant emissions generated by the Heartland Solar Project would not cause a cumulatively considerable contribution to a significant cumulative effect due to a conflict with the SJVAPCD's air quality plans.	None required.	Less-than-Significant Impact
Impact 3.4-2c: The Heartland Solar Project would not result in a cumulatively considerable net increase of criteria pollutants for which the Project region is non-attainment under federal and/or state ambient air quality standards.	None required.	Less-than-Significant Impact
Impact 3.4-3c: The Heartland Solar Project would not contribute to a significant cumulative effect relating to the exposure of sensitive receptors to substantial pollutant concentrations.	None required.	Less-than-Significant Impact
Impact 3.4-4c: The Heartland Solar Project would not contribute to a significant cumulative effect due to ground-disturbing activities that could expose sensitive receptors to the risk of contracting Valley Fever.	None required.	Less-than-Significant Impact
Impact 3.4-5c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the generation of odor or dust emissions.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.4-6c: The PG&E Components would not cause a cumulatively considerable contribution to a significant cumulative effect on air quality.	None required.	Less-than-Significant Impact
Biological Resources		
Impact 3.5-1: The Heartland Solar 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 or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	**Mitigation Measure 3.5-1: Protection of San Joaquin Kit Fox, Burrowing Owl and American Badger During Construction.** ***San Joaquin kit fox and American badger***: Preconstruction surveys shall be conducted by a qualified biologist for the presence of San Joaquin kit fox and American badger within 14 days prior to commencement of construction activities pursuant to the U.S. Fish and Wildlife Service (USFWS) (1999) *Standardized Recommendations for Protection of the San Joaquin Kit Fox*. The surveys shall be conducted in areas of suitable habitat for San Joaquin kit fox and American badger. Areas that have been disked or cultivated within 12 months prior to the start of ground-disturbing activities are not considered suitable. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days prior to disturbance within active portions of the site. If no potential San Joaquin kit fox or American badger dens are identified, then no further mitigation is required. If potential dens are observed and avoidance is determined to be feasible (as defined in CEQA Guidelines Section 15364 consistent with the USFWS [1999] *Standardized Recommendations for Protection of the San Joaquin Kit Fox*) by a qualified biologist in consultation with the Project owner and the County, buffer distances shall be established prior to construction activities. If avoidance of the potential dens is not feasible, the following measures shall be implemented to avoid potential adverse effects to the San Joaquin kit fox or American badger: • If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent them from being used during construction. • If the qualified biologist determines that a potential non-natal den may be active, an on-site passive relocation program shall be implemented with prior approval from the USFWS and California Department of Fish and Wildlife (CDFW). This program shall consist of excluding San Joaquin kit foxes or badgers from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for 72 hours 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 or American badgers have stopped using active dens within the Project boundary, the dens shall be hand-excavated, as stated above for inactive dens. ***Burrowing owl***: The Project owner shall have burrowing owl surveys performed within 14 days before the initiation of equipment staging or ground-disturbing activities. A qualified wildlife biologist shall conduct pre-construction surveys on the site and immediate vicinity only in areas of the site with suitable burrowing habitat to locate any active breeding or wintering burrowing owl burrows, no fewer than 14 days prior to initial ground-disturbing activities (e.g., vegetation clearance, grading, tilling). Areas that have been plowed within 12 months prior to the start of ground-disturbing activities are not considered suitable habitat. The survey methodology shall be consistent with the methods outlined in the Appendix D of the California Department of Fish and Game (CDFG; 2012) *Staff Report on Burrowing Owl Mitigation*, or latest appropriate guidance documents, with regard to transect spacing, weather conditions, and time of day	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	requirements. If the work activity halts for a period of 14 days or more, the survey would need to be conducted again prior to the continuation of site activities. Copies of the survey results shall be submitted to CDFW and the Fresno County Department of Public Works and Planning. • If inactive (unoccupied) burrowing owl burrows are detected any time of the year, the burrows may be excavated by hand with a shovel or covered (i.e., with sandbags) to prevent burrowing owls from re-using them during construction. The burrow's inactive status will be determined by the approved biologist through monitoring prior to burrow excavation. • If active (occupied) burrowing owl burrows are detected, no ground-disturbing activities, such as vegetation clearance, grading, or other construction activities, shall be permitted within a no-disturbance buffer around the burrow. The size of any employed no-disturbance buffers will be in accordance with the recommended restricted activity dates and setback distances by level of disturbance for burrowing owls outlined in the CDFG (2008) *Guidance for Burrowing Owl Conservation:* o 75 meters (250 feet) from occupied burrows during breeding season, and o 50 meters (160 feet) from occupied burrows during non-breeding season. • Depending on the level of disturbance and its duration, visual and auditory screening, and similar, a smaller buffer may be established by a qualified biologist in coordination with CDFW based on the visibility and sensitivity responses of each individual burrowing owl. • If active burrowing owl avoidance is infeasible, then the project shall consult with CDFW regarding potential for project activities to result in take of burrowing owl and shall comply with all avoidance, minimization, and compensatory mitigation requirements set forth in any ITP issued for the project by CDFW authorizing take of the species.	
	Mitigation Measure 3.5-2: Worker Environmental Awareness Program Training and Best Management Practices for Biological Resources During construction, operation and maintenance, and decommissioning of the facility, the Project owner and/or contractor shall implement the following general avoidance and protective measures to protect San Joaquin kit fox and other special-status wildlife species: • Prior to the issuance of grading or building permits and for the duration of construction activities, the Project owner, or its contractor, shall implement a Worker Environmental Awareness Program (WEAP) to train construction personnel how to recognize and protect biological resources on the Project site. The WEAP training shall include a review of the special-status species and other sensitive biological resources that could exist in the Project area, the locations of sensitive biological resources and their legal status and protections, and measures to be implemented for avoidance of these sensitive resources, highlighting San Joaquin kit fox, Swainson's hawk, burrowing owl, and loggerhead shrike. • The Project owner shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. All proposed impact areas, including solar fields, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid special-status species where feasible. Construction-related activities, vehicles, and equipment outside of the impact zone shall be avoided. These areas shall be flagged, and disturbance activities, vehicles, and equipment shall be confined to these flagged areas.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	• To prevent inadvertent entrapment of wildlife during construction, all excavated, steep-walled holes or trenches with a 2-foot or greater depth shall be covered with plywood or similar materials at the close of each working day or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they shall be thoroughly inspected by the approved biological monitor for trapped animals. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If a listed species is trapped, the USFWS and/or CDFW shall be contacted immediately. • All construction pipes, culverts, or similar structures with a 4-inch or greater diameter that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved until a qualified biologist has been consulted and the animal has either moved from the structure on its own accord or until the animal has been captured and relocated by the biologist. • Vehicles and equipment parked on the site shall have the ground beneath the vehicle or equipment inspected for the presence of wildlife prior to moving. • Vehicular traffic shall use existing routes of travel. Cross-country vehicle and equipment use outside of the Project properties shall be prohibited. • A speed limit of 20 miles per hour shall be enforced within all construction areas. • A long-term trash abatement program shall be established for construction, operation, and decommissioning and submitted to the County. Trash and food items shall be contained in closed containers and removed daily to reduce the attractiveness to wildlife such as common raven (*Corvus corax*), coyote (*Canis latrans*), and feral dogs. • Workers shall be prohibited from bringing pets to the Project site and from feeding wildlife in the vicinity. • Intentional killing or collection of any wildlife species shall be prohibited.	
	Mitigation Measure 3.5-3: Protection of Nesting Birds, including Swainson's Hawk If construction is scheduled to commence outside of nesting season (September 1 to January 31), no preconstruction surveys or additional measures are required for nesting birds, including Swainson's hawk and other raptors. Trees that have documented usage by Swainson's hawks as nesting trees within the past 5 years shall not be removed. During the breeding season (February 1 to August 31), in order to avoid impacts to nesting birds in the Project site and immediate vicinity, a qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitat within the Project site where vegetation removal or ground disturbance is planned. The survey shall focus on potential nest sites and cover an area up to 02.5-mile buffer around the site for Swainson's hawk, 300 feet for common raptors, and 100 feet for passerines in areas where access to neighboring properties is available or visible using a spotting scope or binoculars. Surveys shall be conducted no more than 14 days prior to construction activities. If construction is halted for 14 days or more, the area shall be re-surveyed prior to re-initiating work.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	Surveys need not be conducted for the entire Project site at one time; they may be phased so that each work area is surveyed no more than 14 days prior to the start of construction in that area. The surveying biologist must be qualified to determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance. If active nests are found, a suitable buffer (300 feet for common raptors; 0.25 mile for Swainson's hawk; 100 feet for passerines) shall be established around active nests and no construction within the buffer 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). Encroachment into these buffers for non-special-status species may occur at the discretion of a qualified biologist. Encroachment into these buffers for special-status species may occur in coordination or consultation with CDFW.	
Impact 3.5-2: The Heartland Solar Project could interfere with the movement of native resident or migratory wildlife species.	None required.	Less-than-Significant Impact
Impact 3.5-3: The Heartland Solar Project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**Mitigation:** Implement Mitigation Measure 3.5-1, Mitigation Measure 3.5-2, and Mitigation Measure 3.5-3.	Less-than-Significant Impact
Impact 3.5-4: The PG&E Components could affect biological resources	None required.	Less-than-Significant Impact
Impact 3.5-1c: The Heartland Solar Project would make an incremental contribution to cumulative effects on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	**Mitigation:** Implement Mitigation Measure 3.5-1, Mitigation Measure 3.5-2, and Mitigation Measure 3.5-3.	Less-than-Significant Impact
Impact 3.5-2c: The Heartland Solar Project could interfere with the movement of native resident or migratory wildlife species.	None required.	Less-than-Significant Impact
Impact 3.5-3c: The Heartland Solar Project could cause or conflict with a significant cumulative effect due to a conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**Mitigation:** Implement Mitigation Measure 3.5-1, Mitigation Measure 3.5-2, and Mitigation Measure 3.5-3.	Less-than-Significant Impact
Impact 3.5-4c: The PG&E Components could contribute to cumulative effects on biological resources.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Cultural and Tribal Cultural Resources		
Impact 3.6-1: Ground disturbing activities associated with the Heartland Solar Project could cause a substantial adverse change in the significance of a newly-discovered historical or archaeological resource, as defined in CEQA Guidelines section 15064.5.	**Mitigation Measure 3.6-1: Cultural Resources Awareness Training** The Project owner shall retain a Secretary of Interior qualified Project Archaeologist(s) to carry out all mitigation measures related to archaeological and historical resources during construction of their respective project components. Prior to the start of any ground-disturbing activities, the Project owner shall ensure that the qualified archaeologist(s) has prepared and conducted a Cultural Resources Awareness Training for all construction personnel working on the Project. A Native American-designated representative will be invited to attend and provide a Tribal perspective regarding tribal cultural resources for the training. The lead archaeologist will present the initial briefing of the cultural resources sensitivity training at the construction orientation program given to all personnel working on the proposed Project. The Project proponent/operator shall ensure all new employees or onsite workers who have not participated in earlier cultural resources sensitivity training will receive the training prior to working on the construction site. A copy of the cultural resources sensitivity training guide/materials shall be kept onsite and available for all personnel to review and be familiar with as necessary. The training shall include: • An overview of applicable laws and penalties pertaining to disturbing or collecting cultural resources. • A brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, and potential cultural resources that could be encountered during ground disturbing activities to facilitate worker recognition. • Instruction that workers will halt construction in the event of a cultural resource inadvertent discovery (see **Mitigation Measure 3.6-2**), and notification procedures of Project personnel (i.e., Project Archaeologist, and others as appropriate including the Pacific Gas and Electric Company (PG&E) Cultural Resource Specialist if the resource is located within the PG&E scope components). • Roles and responsibilities of the Project Archaeologist and Archaeological and Tribal Monitors (see **Mitigation Measure 3.6-2**). A sign-in sheet shall be completed, retained by the Project construction contractor for the duration of Project construction to demonstrate attendance at the awareness training, and provided to the County upon the completion of Project construction (as appropriate).	Less-than-Significant Impact
	Mitigation Measure 3.6-2: Inadvertent Discovery of Cultural Resources In the event archaeological materials are encountered during Project activities, the Project construction contractor shall immediately cease any ground disturbing activities within 100 feet of the find. The Project Archaeologist, in coordination with the Native American-designated representative from the Santa Rosa Rancheria Tachi-Yokut Tribe and the PG&E Cultural Resource Specialist (as appropriate), shall evaluate the significance of the resources for California Register of Historical Resources eligibility and recommend appropriate treatment measures to the County and the Project owner. Per CEQA Guidelines section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the Project Archaeologist shall, in coordination with a Native American-designated representative from the Santa Rosa Rancheria Tachi-Yokut Tribe and the PG&E Cultural Resource Specialist (as appropriate) develop	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	additional treatment measures in consultation with the County, which may include data recovery or other appropriate measures. The County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are pre-contact, tribal cultural resources, or Native American in nature. The Project Archaeologist shall prepare a report documenting evaluation and/or additional treatment of the resource. A copy of the report shall be provided to the County and to the Southern San Joaquin Valley Information Center. Construction can recommence based on direction of the Project Archaeologist with the County's agreement.	
Impact 3.6-2: Ground disturbing activities associated with the Heartland Solar Project could result in damage to previously unidentified human remains.	**Mitigation Measure 3.6-3: Inadvertent Discovery of Human Remains** Existing regulations, Health and Safety Code Section 7050.5, require that if human remains are uncovered during Project activities, the Project construction contractor shall immediately halt work within 100 feet of the find, immediately contact the Fresno County Coroner (559) 600-3400, and protect the area and ensure the area is not further disturbed. If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code section 7050.5(c), and Public Resources Code section 5097.98 (as amended). The NAHC shall designate a Most Likely Descendant (MLD) for the remains per Public Resources Code section 5097.98, and in accordance to generally accepted cultural or archaeological standards or practices, the landowner shall ensure that the immediate vicinity of the Native American human remains, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the MLD regarding their recommendation for the disposition of the remains, taking into account the possibility of multiple human remains.	Less-than-Significant Impact
Impact 3.6-3: Ground disturbing activities associated with the Heartland Solar Project could cause a substantial adverse change to previously unknown archaeological resources that are also tribal cultural resources, as defined in Public Resources Code section 21074(a).	**Mitigation Measure 3.6-4:** In addition to implementing **Mitigation Measures 3.6-1**, **3.6-2**, and **3.6-3**, the Project owner shall retain a Secretary of the Interior-qualified Project Archaeologist to prepare and implement a Cultural Resource Monitoring Plan (Plan) and coordinate and schedule archaeological monitoring during Project construction. Multiple plans and/or archaeologists may be required to coordinate monitoring for all project components. Each plan will be submitted to the County for review and approval. Each plan will include a requirement for monitoring, as determined by the Project Archaeologist, of initial Project ground-disturbing activities of previously undisturbed soils by a qualified archaeologist and a Native American-designated monitor, if participating. Each plan will include (but not be limited to) the following components: • The identification and qualifications of person(s) responsible for conducting monitoring activities, including a request to the Native American Tribe for a Native American-designated monitor; • The identification of person(s) responsible for overseeing and directing the monitors; • Monitoring protocols and procedures and the required format and content of monitoring logs; • The schedule for submittal of monitoring logs and identification of person(s) responsible for review and approval of monitoring logs; • A protocol for notifications in the event cultural resources are encountered, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation); • Methods to ensure the security of cultural resources sites; and	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	• A protocol for notifying local authorities (i.e., Sheriff, Police) should site looting and other illegal activities occur during construction. • Identify protocols and procedures for a final monitoring report that summarizes the duration of monitoring activities, all daily monitoring logs, any inadvertent discoveries, and associated reporting. This report will be submitted to the County and, once finalized, to the Southern San Joaquin Valley Information Center. During the course of the monitoring, the Project Archaeologist may adjust the frequency, from continuous to intermittent, of the monitoring based on the conditions and professional judgment regarding the potential to impact resources, with consideration of the judgement of the tribal monitor.	
Impact 3.6-4: Ground-disturbing activities associated with the PG&E Components could affect previously unknown, buried archaeological resources or human remains.	**Mitigation:** None required.	Less-than-Significant Impact
Impact 3.6-1c: Heartland Solar Project-related ground disturbance would not cause or contribute to a significant cumulative effect due to substantial adverse change in the significance of a newly-discovered historical or archaeological resource, as defined in CEQA Guidelines section 15064.5.	**Mitigation:** Implement Mitigation Measures 3.6-1: Cultural Resources Awareness Training.	Less-than-Significant Impact
Impact 3.6-2c: Heartland Solar Project-related ground disturbance would not cause or contribute to a significant cumulative effect due to the disturbance of or damage to human remains.	**Mitigation:** Implement Mitigation Measures 3.6-3: Inadvertent Discovery of Human Remains.	Less-than-Significant Impact
Impact 3.6-3c: Ground disturbing activities associated with the Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a substantial adverse change to previously unknown archaeological resources that are also tribal cultural resources.	**Mitigation:** Implement Mitigation Measures 3.6-1, 3.6-2, 3.6-3, and 3.6-4.	Less-than-Significant Impact
Impact 3.6-4c: Ground-disturbing activities associated with the PG&E Components could contribute to cumulative impacts on previously unknown, buried archaeological resources or human remains.	None required.	Less-than-Significant Impact
Energy		
Impact 3.7-1: Heartland Solar Project construction, operation and maintenance, and/or decommissioning and site reclamation would result in the wasteful, inefficient, or unnecessary consumption or use of energy.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.7-2: Construction, operation, and maintenance of the PG&E Components could affect energy resources.	None required.	Less-than-Significant Impact
Impact 3.7-1c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the wasteful, inefficient, or unnecessary consumption or use of energy.	None required.	Less-than-Significant Impact
Impact 3.7-2c: Construction, operation, and maintenance of the PG&E Components could contribute to cumulative effects on energy resources.	None required.	Less-than-Significant Impact
Geology, Soils, and Paleontological Resources		
Impact 3.8-1: The Heartland Solar Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking and seismic-induced ground failure, including liquefaction.	None required.	Less-than-Significant Impact
Impact 3.8-2: The Heartland Solar Project would not result in substantial soil erosion or loss of topsoil.	None required.	Less-than-Significant Impact
Impact 3.8-3: The Heartland Solar Project would not 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.	None required.	Less-than-Significant Impact
Impact 3.8-4: The Heartland Solar Project would not be located on expansive soil, creating substantial direct or indirect risks to life or property.	None required.	Less-than-Significant Impact
Impact 3.8-5: The Heartland Solar Project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater.	None required.	Less-than-Significant Impact
Impact 3.8-6: The Heartland Solar Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**Mitigation Measure 3.8-6: Unanticipated Fossil Discovery** Prior to any ground disturbing activities, the Project owner shall develop and implement a Paleontological Worker Education and Awareness Program. If paleontological resources are discovered during ground-disturbing activities (e.g., during Project construction or decommissioning), all earthwork or other types of ground disturbance within 50 feet of the find shall stop immediately until a qualified professional paleontologist meeting the standards of the SVP can assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the paleontologist may record the find and allow work to continue or recommend salvage and recovery of the fossil. The paleontologist may also propose	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	modifications to the stop-work radius based on the nature of the find, site geology, and the activities occurring on the site. If treatment and salvage is required, recommendations will be consistent with the standards of the SVP that are current as of the discovery and with currently-accepted scientific practice. The current standards of the SVP are set forth in the SVP's 2010 *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*, as prepared by the SVP's Impact Mitigation Guidelines Revision Committee. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds.	
Impact 3.8-1c: The Heartland Solar Project would not cause or contribute to any significant cumulative effect due to the risk of loss, injury, or death involving strong seismic ground shaking and seismic-induced ground failure, including liquefaction.	None required.	Less-than-Significant Impact
Impact 3.8-2c: The Heartland Solar Project would not cause or contribute to any significant cumulative effect resulting in substantial soil erosion or loss of topsoil.	None required.	Less-than-Significant Impact
Impact 3.8-3c: The Project would not cause or contribute to a significant cumulative effect due to its location on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project.	None required.	Less-than-Significant Impact
Impact 3.8-4c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to being located on expansive soil.	None required.	Less-than-Significant Impact
Impact 3.8-5c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to onsite soils being incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater.	None required.	Less-than-Significant Impact
Impact 3.8-6c: The Heartland Solar Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**Mitigation:** Implement Mitigation Measure 3.8-6.	Less-than-Significant Impact
Greenhouse Gas Emissions		
Impact 3.9-1: The Heartland Solar Project would generate direct and indirect GHG emissions.	None required.	Less-than-Significant Impact
Impact 3.9-2: The Heartland Solar Project could conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.9-3: The PG&E Components would cause GHG emissions.	None required.	Less-than-Significant Impact
Hazards and Hazardous Materials		
Impact 3.10-1: The Heartland Solar Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites.	**Mitigation Measure 3.10-1: Site Management Plan** The contractor conducting the cleanup of the illegal dump sites shall develop and implement a site management plan (SMP) for the management of waste, hazardous materials, and affected soil before any ground-disturbing activity. The SMP shall describe measures for (i) removal of waste, hazardous materials, and contaminated soil (ii) characterization of the soil underlying the waste and hazardous materials to verify all contaminated materials have been removed per regulatory standards, and (iii) offsite disposal of waste, hazardous materials, and soil in compliance with all applicable regulations. The SMP shall include the following, at a minimum: • Site description, including the waste and hazardous materials that may be encountered. • Roles and responsibilities of onsite workers, supervisors, and the regulatory agency. • Training for site workers focused on the recognition of and response to encountering waste and hazardous materials. • Notification requirements in the event of discovery of unknown contamination. • Protocols for the materials (waste, hazardous materials, and soil) testing, handling, removing, transporting, and disposing of removed materials in a safe, appropriate, and lawful manner. • Reporting requirement to the overseeing regulatory agency, if any contamination is found that requires agency oversight, documenting that site activities were conducted in accordance with the SMP. The SMP shall be submitted to the lead agency for review before the start of cleanup activities and as a condition of the grading and/or construction permit(s). The contract specifications shall mandate full compliance with all applicable federal, state, and local regulations related to the identification, transportation, and disposal of hazardous materials.	Less-than-Significant Impact
Impact 3.10-2: The Heartland Solar Project would not otherwise create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	None required.	Less-than-Significant Impact
Impact 3.10-3: The Heartland Solar Project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	None required.	Less-than-Significant Impact
Impact 3.10-4: The PG&E Components could affect hazards and hazards materials considerations.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.10-1c: The Heartland Solar Project would not contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites.	None required.	Less-than-Significant Impact
Impact 3.10-2c: The Heartland Solar Project could contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	None required.	Less-than-Significant Impact
Impact 3.10-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan.	None required.	Less-than-Significant Impact
Impact 3.10-4c: The PG&E Components would not make a cumulatively considerable contribution to any cumulative effect on hazards and hazards materials considerations	None required.	Less-than-Significant Impact
Hydrology and Water Quality		
Impact 3.11-1: The Heartland Solar Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	**Mitigation Measure 3.11-1. Stormwater Pollution Prevention Plan** Prior to the issuance of a grading permit, the Project proponent/operator shall submit to the County a Stormwater Pollution Prevention Plan (SWPPP) complying with requirements of the Construction Stormwater General Permit. The SWPPP shall be designed to minimize runoff and shall specify best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sediment or any other pollutants from moving offsite and into receiving waters. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. Recommended best management practices to be incorporated in the SWPPP may include, but would not be limited to, the following: a. Minimization of vegetation removal; b. Implementing sediment controls, including silt fences a necessary; c. Installation of a stabilized construction entrance/exit and stabilization of disturbed areas; d. Properly containing and disposing of hazardous materials used for construction onsite; e. Properly covering stockpiled soils to prevent wind erosion; f. Proper protections and containment for fueling and maintenance of equipment and vehicles; and	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	g. Appropriate disposal of demolition debris, concrete and soil, and aggressively controlling litter. h. Cleanup of silt and mud on adjacent street due to construction activity. i. Checking all lined and unlined ditches after each rainfall. j. Install additional erosion control measures as may be required due to uncompleted grading operations or unforeseen circumstances which may arise.	
Impact 3.11-2: The Heartland Solar Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.	None required.	Less-than-Significant Impact
Impact 3.11-3: The Heartland Solar Project would not 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: i) Results in substantial erosion or siltation on- or off-site; ii) substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) creates or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff; or iv) impedes or redirects flood flows.	**Mitigation:** Implement Mitigation Measure 3.11-1.	Less-than-Significant Impact
Impact 3.11-4: The Heartland Solar Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	**Mitigation:** Implement Mitigation Measure 3.11-1.	Less-than-Significant Impact
Impact 3.11-5: The PG&E Components could affect hydrology and water quality considerations.	None required.	Less-than-Significant Impact
Impact 3.11-1c: The Heartland Solar Project would not result in a cumulatively considerable contribution to any significant cumulative effect due to violation of any water quality standards or waste discharge requirements or other substantial degradation of surface or groundwater quality.	**Mitigation:** Implement Mitigation Measure 3.11-1.	Less-than-Significant Impact
Impact 3.11-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a substantial decrease in groundwater supplies or substantial interference with groundwater recharge that could impede sustainable groundwater management of the basin.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.11-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to substantial alteration of existing drainage patterns in a manner that: i) Results in substantial erosion or siltation on- or off-site; ii) substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) creates or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff; or iv) impedes or redirects flood flows.	**Mitigation:** Implement Mitigation Measure 3.11-1.	Less-than-Significant Impact
Impact 3.11-4c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a conflict with or obstruction of the implementation of the basin plan or GSP.	**Mitigation:** Implement Mitigation Measure 3.11-1.	Less-than-Significant Impact
Impact 3.11-5c: The PG&E Components would not cause a cumulatively considerable contribution to cumulative effects on hydrology or water quality.	None required.	Less-than-Significant Impact
Noise and Acoustics		
Impact 3.14-1: Construction and decommissioning of the Heartland Solar Project during nighttime hours could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance.	**Mitigation Measure 3.14-1: Noise Reduction for Nighttime Construction and Decommissioning Activities** Prior to issuance of construction permits for the Project, the Project owner shall submit to the County for approval a Construction Noise Reduction Plan to be implemented by all contractors as a condition of contract. Contents of the Plan should include at a minimum: • Maintain all construction tools and equipment in good operating order according to manufacturers' specifications; • Limit use of major excavating, pile driving, earth-moving machinery, and pneumatic tools to daytime hours; • Equip any internal combustion engine used for any purpose on the job or related to the job with a properly operating muffler that is free from rust, holes, and leaks; • For construction devices that utilize internal combustion engines, ensure the engine's housing doors are kept closed, and install noise-insulating material mounted on the engine housing consistent with manufacturers' guidelines, if possible; • Limit possible evening and nighttime shift work to the southern (i.e., Areas 8a and 8b) and/or northern (i.e., Areas 1 through 3) portions of the Project site conducting low noise activities such as welding, wire pulling, and other similar activities, together with appropriate material handling equipment; and • Utilize a Complaint Resolution Procedure to address any noise complaints received from residents.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.14-2: Operation and maintenance of the Heartland Solar Project could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site.	None required.	Less-than-Significant Impact
Impact 3.14-3: The Heartland Solar Project could expose people and/or structures to vibration levels and groundborne noise levels.	None required.	Less-than-Significant Impact
Impact 3.14-4: Construction of the PG&E Components during nighttime hours could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance.	None required.	Less-than-Significant Impact
Impact 3.14-1c: The Heartland Solar Project would contribute to a significant cumulative effect due to the generation of a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance during construction and decommissioning activities.	**Mitigation:** Implement Mitigation Measure 3.14-1.	Less-than-Significant Impact
Impact 3.14-2c: The Heartland Solar Project would not contribute to a substantial cumulative temporary or permanent increase in ambient noise levels during operation and maintenance activities.	None required.	Less-than-Significant Impact
Impact 3.14-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to exposure of people or structures to vibration levels and groundborne noise levels.	None required.	Less-than-Significant Impact
Impact 3.14-4c: Construction of the PG&E Components during nighttime hours could generate noise that, in combination with noise generated by other projects, could exceed nighttime noise level standards established in the local general plan or noise ordinance.	None required.	Less-than-Significant Impact
Transportation		
Impact 3.18-1: The Heartland Solar Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway facilities.	**Mitigation Measure 3.18-1: Construction and Decommissioning Traffic Management Plan** Prior to the issuance of construction or building permits and the issuance of decommissioning authorizations, the Project owner and/or its construction contractor shall prepare and submit a Traffic Management Plan to the Fresno County Public Works Department and the California Department of Transportation, District 6, as appropriate, for approval. The Traffic Management Plan must be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and must include, but not be limited to, the following elements:	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
	• Temporary Traffic Control plan that addresses traffic safety and control through the work zone, including during temporary lane closures (if needed) to accommodate materials delivery, transmission line stringing activities, or any other utility connections; • Identify the timing of deliveries of heavy equipment and building materials; • Requirement for designated construction staff to be assigned as flaggers to direct traffic into and/or through temporary traffic control zones, as needed; • Requirement to place temporary signage, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic; • Ensure access for emergency vehicles to the Project site; • Access to adjacent properties shall be maintained; • Specify both construction/decommissioning-related vehicle travel and oversize load haul routes, minimizing construction/decommissioning traffic during the AM and AM peak hour, distributing construction/decommissioning traffic flow across alternative routes to access the Project site, and avoiding residential neighborhoods to the maximum extent feasible. • Requirement to obtain all necessary permits for the work within the road right of way or use of oversized/overweight vehicles that would utilize County-maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the approved traffic plan and issued permits shall be submitted to the Fresno County Divisions of Public Works and Planning. • Applicant shall coordinate with Fresno County to assess potential impacts to County roads from Project-related activities. If any County roads are demonstrably damaged as a result of the Project, the Applicant shall work with Fresno County to determine appropriate repairs, which may include paving, slurry-sealing, or reconstruction, as required by state and/or County standards. The Traffic Management Plan elements listed above would reduce the potentially significant effects of short-term and intermittent construction-related congestion caused by construction vehicles/equipment on local roadways.	
Impact 3.18-2: The Heartland Solar Project would not conflict or be inconsistent with CEQA Guidelines section 15064.3(b).	None required.	Less-than-Significant Impact
Impact 3.18-3: The Heartland Solar Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	None required.	Less-than-Significant Impact
Impact 3.18-4: The Heartland Solar Project could result in inadequate emergency access.	**Mitigation**: Implement Mitigation Measure 3.18-1.	Less-than-Significant Impact
Impact 3.18-5: Construction, operation and maintenance of the PG&E Components could affect transportation	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.18-1c: The Heartland Solar Project could cause a cumulatively considerable contribution to a significant cumulative effect due to a conflict with a program plan, ordinance or policy addressing the circulation system, including roadway facilities.	**Mitigation**: Implement Mitigation Measure 3.18-1.	Less-than-Significant Impact
Impact 3.18-2c: The Heartland Solar Project would not cause or contribute to significant cumulative effect due to a conflict or inconsistency with CEQA Guidelines section 15064.3(b).	None required.	Less-than-Significant Impact
Impact 3.18-3c: The Heartland Solar Project would cause or contribute to a significant cumulative effect due to a substantial increase in hazards due to a geometric design feature or incompatible uses.	None required.	Less-than-Significant Impact
Impact 3.18-4c: The Heartland Solar Project could cause or contribute to a significant cumulative effect due to inadequate emergency access.	**Mitigation**: Implement Mitigation Measure 3.18-1.	Less-than-Significant Impact
Impact 3.18-5c: Construction, operation and maintenance of the PG&E Components would not cause a cumulatively considerable contribution to a cumulative impact on transportation.	None required.	Less-than-Significant Impact
Utilities and Service Systems		
Impact 3.19-1: The Heartland Solar Project would not result in the construction of new or expanded water, wastewater treatment, electric power, or telecommunications facilities that would cause significant environmental effects.	None required.	Less-than-Significant Impact
Impact 3.19-2: The Heartland Solar Project could result in the construction of new or expanded stormwater drainage that would cause significant environmental effects.	**Mitigation**: Implement Mitigation Measure 3.11-1.	Less-than-Significant Impact
Impact 3.19-3: The Heartland Solar Project would have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years.	None required.	Less-than-Significant Impact
Impact 3.19-4: The Heartland Solar Project would result in a determination by the wastewater treatment provider that serves the Project that it does have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.19-5: The Heartland Solar Project 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.	None required.	Less-than-Significant Impact
Impact 3.19-6: Construction, operation, and maintenance of the PG&E Components would not result in significant impacts to utilities and service systems.	None required.	Less-than-Significant Impact
Impact 3.19-1c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, or telecommunications facilities.	None required.	Less-than-Significant Impact
Impact 3.19-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to insufficient availability of water supplies to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.	None required.	Less-than-Significant Impact
Impact 3.19-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to the generation of solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or due to other impairment of the attainment of solid waste reduction goals.	None required.	Less-than-Significant Impact
Impact 3.19-4c: Construction, operation, and maintenance of the PG&E Components would not cause a cumulatively considerable contribution to cumulative utilities-related impacts.	None required.	Less-than-Significant Impact
Wildfire		
Impact 3.20-1: The Heartland Solar Project would not substantially impair an adopted emergency response plan or emergency evacuation plan.	**Mitigation:** Implement Mitigation Measure 3.18-1.	Less-than-Significant Impact
Impact 3.20-2: The Heartland Solar Project would not, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	None required.	Less-than-Significant Impact

Environmental Impact	Mitigation Measures	Level of Significance after Mitigation
Impact 3.20-3: The Heartland Solar Project would require the installation or maintenance of associated infrastructure (such as roads, power lines, or other utilities) that may exacerbate fire risk or result in temporary or ongoing impacts to the environment.	None required.	Less-than-Significant Impact
Impact 3.20-4: Construction of the PG&E Components could affect wildfire considerations by impairing emergency evacuation, if needed, or by introducing additional potential ignition sources into the environment.	None required.	Less-than-Significant Impact
Impact 3.20-1c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to substantial impairment of an adopted emergency response plan or emergency evacuation plan.	**Mitigation:** Implement Mitigation Measure 3.18-1.	Less-than-Significant Impact
Impact 3.20-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect by exacerbating wildfire risks due to slope, prevailing winds, or other factors.	None required.	Less-than-Significant Impact
Impact 3.20-3c: The Heartland Solar Project would not cause or contribute to a significant adverse cumulative effect due to roads, power lines, or other utilities the installation or maintenance of which could exacerbate fire risk or result in temporary or ongoing impacts to the environment.	None required.	Less-than-Significant Impact
Impact 3.20-4c: Construction of the PG&E Components would cause impacts that contribute to cumulative effects on wildfire considerations.	None required.	Less-than-Significant Impact

ES.7 Overview of Alternatives to the Project

CEQA requires an EIR to analyze a range of reasonable alternatives to proposed project that could feasibly attain most of the basic objectives of the project while substantially reducing or eliminating significant environmental impacts. 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 and screening process, alternatives eliminated from further consideration, and alternatives considered in the EIR are described in greater detail in Chapter 4, *Alternatives*.

ES.7.1 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 potential alternatives listed below were eliminated from further consideration in the EIR because they failed to pass the screening criteria. Each is briefly described in Section 4.2, *Alternatives Rejected from Detailed Consideration*.

- Alternative Sites
- Alternative Water Supply Source
- Alternative Green Energy Input
- Alternative Hydrogen Storage
- Reduced Hydrogen Capacity Output Alternative

ES.7.2 Alternatives Considered in the EIR

Three alternatives to the Project are evaluated in detail in the EIR: the No Project Alternative is described in Section 4.3.2; Alternative 1, *Reduced Acreage Alternative*, is described in Section 4.3.2; and Alternative 2, *Distributed Solar*, is described in Section 4.3.3.

No Project Alternative

CEQA Guidelines section 15126.6(e) requires consideration of a No Project Alternative. This analysis discusses the existing conditions on or about October 24, 2022, when the Notice of Preparation was issued for this Draft EIR, 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.

Under the No Project Alternative, the proposed solar and energy storage facility site would continue to be used for dry-farmed agriculture and/or left fallow. The 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) (Fresno County 2023). 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. 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 use is continued as it exists under pre-Project conditions.

Under a no-development scenario, the Project site would continue to be intermittently dry farmed for grain or forage crops or lay fallow and other conditions of the existing environmental setting would be maintained. Changes to that setting, including changes to the landscape (visual resources, habitat, and land use/agriculture); Project-related noise, truck use of SR 33 and other area roads, and air emissions would not occur; and potential ground-disturbance related impacts to cultural tribal cultural resources, wildlife habitat, and environmental benefits relating to maintaining the existing groundcover as it relates to dust control or carbon sequestration, or benefits relating to renewable energy generation would not be realized from the production of solar generated energy or energy storage on the site.

Alternative 1, Reduced Acreage Alternative

Alternative 1 would include all of the components of the Project as proposed but would reduce the footprint from approximately 2,310 acres to approximately 1,352 acres by eliminating solar energy generation-related development in the approximately 958 acres located north of W. Lincoln Avenue, south of W. American Avenue, west of SR 33 and east of S. Los Angeles Avenue. The 59-acre reduction in the size of the solar array area would result in a corresponding reduction in power output. As reduced, Alternative 1's solar panel arrays would be capable of generating 176 MW_{AC}.

Alternative 2, Distributed Solar Alternative

Alternative 2 would result in the rooftop development of a number of geographically distributed solar PV systems on existing rooftops throughout Fresno County. Alternative 2 would contribute to grid reliability and resilience, increase energy efficiency and renewable energy, and use smart grid and zero-net energy technologies. Under this alternative, all panels would be flush-mounted with the roof. No new land would be developed or altered; however, depending on the type of solar modules installed, a similar or greater amount of acreage (i.e., 2,362 acres or more of total rooftop area) may be required to attain Project's 300 MW of solar PV generating capacity. Vehicle trips needed to support construction and maintenance activities would be dispersed in accordance with the individual site locations. Like the Project, Alternative 2 would be designed to operate year-round using PV panels to convert solar energy directly to electrical power. Energy generated either would be for on-site use only, or could be shared via a community solar arrangement that lets multiple customers share power from a single local solar source. Power generated by such distributed solar PV systems typically would not require the construction of new electrical substation or transmission facilities.

ES.8 Environmentally Superior Alternative

The CEQA Guidelines define the *environmentally superior alternative* as that alternative with the least adverse impacts on the project area and its surrounding environment. Draft EIR Section 4.5, *Comparison of Alternatives*, in Chapter 4 compares the potential environmental impacts of the Project to those of the No Project Alternative, Alternative 1, and Alternative 2. The No Project Alternative would avoid all impacts of the Project and instead would result in the environmental benefits and consequences that reasonably would be expected to occur based on the site's current use non-irrigated or fallowed agricultural land. Therefore, for this Project, the No Project Alternative is considered the environmentally superior alternative for CEQA purposes. However, the No Project Alternative would fail to meet the basic objectives of the Project. Since 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(e)(2).

Determining an environmentally superior alternative can be difficult because of the many factors that must be balanced. For example, Alternative 2 could be preferred because, relative to the Project, it would use existing rooftop spaces, minimizing the need at affect agricultural land, and would reduce impacts on the physical environment. In contrast, the Project could be preferred because, relative to Alternative 2, it would have a greater impact on reducing reliance on the overall grid's fossil fuel consumption and has potential to preserve potential future use of the Project site for more productive agricultural uses following project decommissioning and site restoration. Additional information received in or developed during the agency and public review period for the Draft EIR or during the Project approval process that could affect the balancing of the respective benefits and consequences of the alternatives. Accordingly, while a preliminary determination has been made that the Project would be the Environmentally Superior Alternative, it would be premature to formally designate it as such at this stage. This preliminary determination as to which alternative is the Environmentally Superior Alternative will be confirmed or corrected in the Final EIR.

ES.9 Areas of Controversy

Any of the environmental issues considered during scoping or in this Draft EIR could become an issue of controversy. Preliminarily, the County has identified areas of controversy as including the issues and questions raised in agency and public comments received during scoping; all comments received during the scoping period are included in the Project Scoping Report, which is included as Appendix A to this Draft EIR. Issues identified as potential areas of controversy relate to: Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, and Utilities and Service Systems.

ES.10 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;
- Choose among alternatives;
- Determine whether the recommended mitigation measures should be adopted or modified; and
- Determine whether or not additional mitigation measures need to be applied to the Project.

ES.11 References

Fresno County. 2000. *Fresno County General Plan Background Report.* Adopted October 3, 2000. Table 5-15, Municipal Wastewater Treatment Facilities.

Fresno County. 2023. Zoning Ordinance of the County of Fresno, Section 816: "AE" Exclusive Agricultural District.

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CHAPTER 1
Introduction

1.1 Project Overview

The Heartland Solar Project consists of renewable energy generation and energy storage system facilities. Proposed facilities would generate approximately 300 megawatts alternating current of solar photovoltaic energy and have capacity to store approximately 300 megawatts of energy on approximately 2,362 acres of private land in western Fresno County. These facilities would interconnect to the regional electrical grid via an electrical generation-tie line between the solar facility and the existing Tranquillity Switching Station, which is located approximately 1.25 miles south of the solar and energy storage facility site. The Tranquillity Switching Station is owned and operated by the Pacific Gas and Electric Company (PG&E). PG&E is subject to the jurisdiction and oversight of the California Public Utilities Commission (CPUC). PG&E also would conduct other necessary infrastructure work to support interconnection of the Heartland Solar Project.

Infrastructure and other improvements to be constructed, operated, and maintained by PG&E to support the Heartland Solar Project are referred to as the *PG&E Components*. The Heartland Solar Project and the PG&E Components collectively are referred to in Environmental Impact Report (EIR) No. 7564 as the *Project*. Distinctions between the Heartland Solar Project and the PG&E Components are made as needed for clarity.

1.2 Purpose and Uses of this Document by Agencies

The purpose of this Draft EIR (EIR No. 7564) is to provide information documenting analysis of the potential environmental impacts of the Heartland Solar Project, as proposed by Heartland Solar 1, LLC, a wholly-owned indirect subsidiary of Clearway Energy Group LLC. EIR No. 7564 conducts an assessment pursuant to the California Environmental Quality Act (CEQA) and its implementing regulations (the CEQA Guidelines) that describes the environmental and regulatory setting; criteria used to evaluate the significance of potential direct, indirect, and cumulative impacts; methods used in evaluating these impacts; and results of the impact assessment. Where a potential significant impact is identified, the EIR identifies one or more mitigation measures that, if implemented, could reduce or avoid that impact. EIR No. 7564 also presents feasible alternatives to the Heartland Solar Project, ultimately informing decision-makers and the public about the potential impacts on the physical environment.

CEQA Guidelines Section 15124(d) requires that an EIR contain a statement briefly describing the intended uses of the EIR. The CEQA Guidelines indicate that the EIR should identify the

ways in which the lead agency and any responsible agencies would use this document in their approval or permitting processes. The following discussion summarizes the roles of the agencies and the intended uses of the EIR.

The County of Fresno (the County) has the primary responsibility for considering whether to grant its discretionary approval of the Heartland Solar Project, is the lead agency for purposes of CEQA, and has directed the preparation of this Draft EIR. This analysis will be used by the County, in conjunction with other information included in the County's formal record, when considering whether to approve, approve with conditions, or deny requested discretionary authorizations for the Heartland Solar Project, including Unclassified Conditional Use Permit Application No. 3630. Other necessary County approvals may include potential additional Conditional Use Permit(s) for subcomponents of the Project, a road vacation for segments of County roads, an encroachment permit from the Road Maintenance and Operations Division of the Department of Public Works and Planning if work is to be performed within a County right-of-way, and/or building and grading permits for the erection, demolition, or conversion of any building or structure.

A portion of the generation-tie line and improvements at the existing Tranquillity Switching Station would be constructed, owned, and operated by PG&E, which is under the exclusive regulatory authority of the CPUC. PG&E's facilities are analyzed in this CEQA document because, combined with the Heartland Solar Project, they constitute the whole of the project being evaluated under CEQA. Nevertheless, PG&E's interconnection facilities are not part of the unclassified conditional use permit application before the County and would not be authorized by the County's decision. For this reason, mitigation measures identified in this EIR are not applicable to PG&E's scope of work. Instead, as proposed, the PG&E Components incorporate PG&E's Construction Measures, which are designed to ensure that any environmental effects of PG&E's scope of work would remain less than significant. The CPUC may utilize and incorporate this EIR, including all of the applicable measures, by reference in the authorizing documents for the PG&E facilities.

Other State or local agencies also may rely on information in this Draft EIR to inform their own permitting decisions and approvals for the Project, potentially including the following:

- San Joaquin Valley Unified Air Pollution Control District approval of stationary and/or mobile sources.
- California Department of Fish and Wildlife authorization pursuant to the agency's lake and streambed alteration regulatory authority (Fish and Game Code Section 1600 et seq.) and/or if the proposed activities could result in "take" as defined in the California Endangered Species Act (Fish and Game Code Section 2050 et seq.).
- California Regional Water Quality Control Board authorization if construction activities disturb more than 1 acre, pursuant to the National Pollutant Discharge Elimination System General Permit for Discharges of Storm Water Associated with Construction Activity, or for a Waste Discharge Requirement Order, if required.
- CPUC issuance of an Advice Letter pursuant to General Order 131-E authorizing PG&E to proceed with construction of the generation-tie line. The CPUC may utilize and incorporate this EIR, including all of the applicable measures, by reference in the authorizing documents for the PG&E facilities.

1.3 Public Involvement and the CEQA Process

1.3.1 Tribal Consultation

CEQA lead agencies consult with tribes that are traditionally and culturally affiliated with the project area and that have requested consultation pursuant to Public Resources Code Section 21080.3.1. The purpose of the consultation is to determine whether a proposed project may result in a significant impact on tribal cultural resources that may be undocumented or known only to the tribe and its members.

In letters dated April 19, 2022, the County sent formal notification and requests to consult to representatives of four California Native American tribes: Dumna Wo Wah, Picayune Rancheria of the Chukchansi Indians, Santa Rosa Rancheria Tachi Yokut Tribe, and Table Mountain Rancheria. No responses were received within the statutory 30-day response period. Accordingly, formal tribal consultation is concluded pursuant to Public Resources Code Section 21080.3.2(b).

1.3.2 Scoping

On October 24, 2022, the County published and distributed a Notice of Preparation (NOP) to advise interested parties that an EIR would be prepared for the Project. On that date, the NOP was sent to a mailing list that included Tribes; local, state, and federal agencies (including potential responsible and trustee agencies); property owners within 1-mile of the Project site; and other interested parties. The NOP also was posted with the Fresno County Clerk, emailed to all on the initial project-specific distribution list for whom the County had an email address, and was posted on the County's website. The NOP was uploaded to the Governor's Office of Planning and Research, State Clearinghouse, on October 27, 2022.

In addition to the NOP, the County notified the public about the public scoping meeting through a legal advertisement published in The Business Journal on October 24, 2022. Notifications provided basic Project information, the date, time, and information about how to participate in the scoping meeting, and a brief explanation of the public scoping process. The County conducted a virtual public scoping meeting via Zoom on Tuesday, November 8, 2022, beginning at 10 a.m. The public scoping meeting presentation included an overview of the Project, the County's land use and permitting process, and the environmental review process. Input was requested as to environmental considerations of particular interest and with respect to potential alternatives to the Project.

The NOP, NOP mailing list, scoping meeting presentation materials, and copies of correspondence received are included in Appendix A, *Scoping Report*. Input received during the scoping process has been considered in the analysis documented in this EIR.

1.3.3 Public Comment on the Draft EIR

This Draft EIR is available to Tribes; federal, state, and local agencies; and to interested individuals who may wish to review and comment on the report. An electronic copy of the Draft EIR and reference materials relied upon in its drafting will be provided via the County's website: http://www.co.fresno.ca.us/EIR.

Printed copies of the Draft EIR, or electronic copies provided on a universal serial bus (USB), will be available for review at each of the locations listed below. Electronic copies at these locations will contain copies of the reference materials cited and relied upon in the analysis.

- Fresno County Public Works and Planning Department, 2220 Tulare Street, Fresno.
- Fresno County Main Library, Reference Department, 2420 Mariposa Street, Fresno.
- Fresno County Public Library, Mendota Branch Library, 1246 Belmont Avenue, Mendota.

Written comments may be submitted to the County during a 45-day public review period. Written comments on this Draft EIR will be accepted via U.S. Mail and email. If a public meeting is to be held, it will be noticed under separate cover. All comments received will be addressed in a Response to Comments document, which, together with this Draft EIR, will constitute the Final EIR for the Project.

1.3.4 Final EIR

After the end of the Draft EIR's public review period, the County will prepare a Final EIR for consideration by the public and County decision-makers. The Final EIR will include a list of commenters, comments and recommendations received on the Draft EIR either verbatim or in summary, written responses to significant environmental points raised in the review and consultation process from comments received, and revisions to the Draft EIR made in response to the comments received.

1.3.5 Findings of Fact and Decision-Making

The Planning Commission will review and consider the Final EIR before taking action on the Project. The Board of Supervisors would hear an appeal, if one is made, of a Planning Commission decision on the EIR or the Project. As part of its consideration of the EIR, County decisionmakers would make the following findings regarding each significant impact on the environment, consistent with Public Resources Code Section 21081:

1. Changes or alterations have been required in, or incorporated into, the Project that mitigate or avoid the significant effects on the environment;
2. Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency; or
3. Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the EIR.

With respect to any significant impacts that are subject to the third finding, the County must find that specific overriding economic, legal, social, technological, or other benefits of the Project outweigh its potential to result in significant unavoidable adverse impacts on the environment before it could approve the Project.

CHAPTER 2
Project Description

2.1 Project Overview

Heartland Solar 1, LLC, a wholly owned indirect subsidiary of Clearway Energy Group LLC, proposes to construct, operate, maintain, and decommission the Heartland Solar Project, which consists of renewable photovoltaic (PV) solar energy generation and energy storage system facilities. Proposed facilities would generate approximately 300 megawatts alternating current (MW_{AC}) of solar PV energy and have capacity to store up to 300 MW of energy on approximately 2,362 acres of private land in western Fresno County. These facilities would interconnect to the regional electrical grid via an electrical generation-tie (gen-tie) line between the solar facility and the existing Tranquillity Switching Station, which is located approximately 1.25 miles south of the solar and energy storage facility site. The Tranquillity Switching Station is owned and operated by the Pacific Gas and Electric Company (PG&E), which is subject to the jurisdiction and oversight of the California Public Utilities Commission (CPUC). PG&E also would conduct other necessary infrastructure work to support interconnection of the Heartland Solar Project. Infrastructure and other improvements to be constructed, operated, and maintained by PG&E to support the Heartland Solar Project are referred to as the *PG&E Components*. The Heartland Solar Project and the PG&E Components collectively are referred to in this document as the *Project*. Distinctions between the Heartland Solar Project and the PG&E Components are made as needed for clarity. **Table 2-1**, *Project Components*, summarizes the acreage allocated to, and ground disturbance that could be caused by, each of the Project components including the solar panel array, solar facility substation, gen-tie line, and Tranquillity Switching Station associated with unclassified Conditional Use Permit No. 3630 and the battery energy storage system (BESS) potentially associated with an additional Conditional Use Permit.

2.2 Location of the Project Site

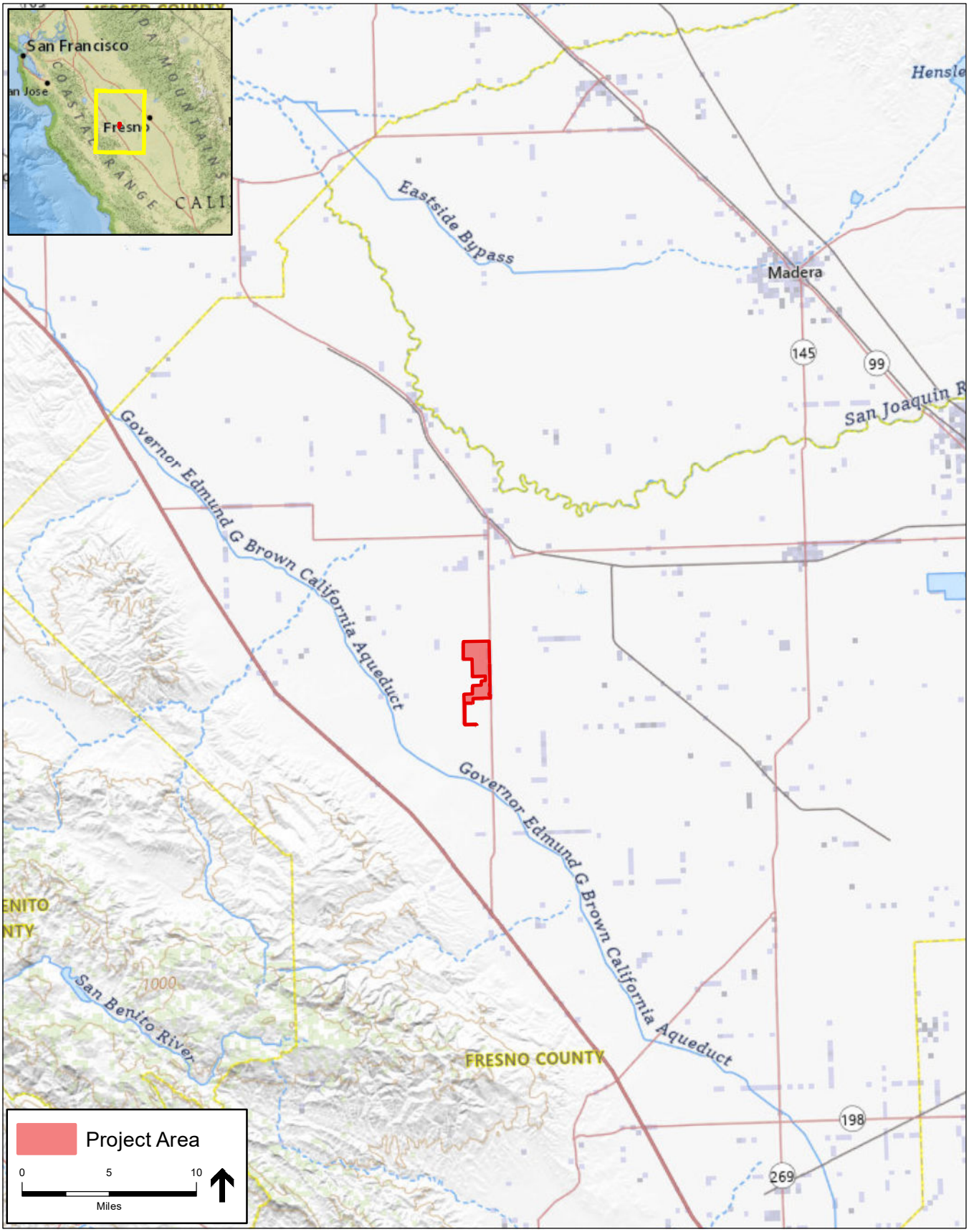
The proposed Project site is located approximately 6 miles southwest of the City of Mendota, 10 miles east of Interstate 5 (I-5), to the east of S. San Bernardino and Los Angeles avenues, south of W. American Avenue, west of State Route 33 (SR 33, also called S. Derrick Avenue), 0.5 mile north of W. Manning Avenue, and 1.25 miles north of the PG&E's Tranquillity Switching Station. The Project site is located across SR 33 from the existing Adams East solar facility and immediately north of the approved Luna Valley solar facility. The Tranquillity Switching Station is located near the northeast corner of the intersection of W. Dinuba Avenue and S. Ohio Avenue, within the boundaries of the Tranquillity Solar Generating Facility. See **Figure 2-1**, *Regional Location*, and **Figure 2-2**, *Project Site.* Parcel ownership and associated components are summarized in **Table 2-2**, *Project Site Details*.

TABLE 2-1
PROJECT COMPONENTS

Name	Description	Approximate Acreage[1]	Maximum Depth of Disturbance Below Ground Surface
Heartland Solar Project Components			
Solar Panel Array	Rows of solar panels on the west side of State Route 33 (SR 33) between W. American Avenue and W. South Avenue. The solar panels would be installed using either steel piles or concrete foundations, depending on soil conditions. It is estimated that the solar panel arrays would be capable of generating 300 MW_{AC}.[2]	2,340 acres	15 feet
Solar Facility Substation	An electric system facility where direct electricity generated by the solar array would be stepped up from medium voltage (34.5 kilovolt [kV]) to high voltage (230 kV) for transmission and interconnection at PG&E's existing Tranquillity Switching Station.	4 acres	50 feet
Battery Energy Storage System (BESS)	Proposed lithium ion, sodium-sulphur, or vanadium-redox flow technology would be used for an energy storage system to be co-located with the project substation. Self-contained energy storage modules would be placed in racks within prefabricated metal enclosures. Enclosures, if used, would be no taller than approximately 10 feet tall and 30 feet wide regardless of final design.	20 acres	20 feet
Generation-tie (Gen-tie) Line	Up to approximately 5-mile-long, 230 kV generation-tie line to connect the solar substation to the offsite point of change of ownership (POCO) to PG&E.[3] Fifty-seven (57) gen-tie line structures for this section would be constructed by Heartland Solar 1, LLC. Fiber lines may be placed on the gen-tie line or in underground conduits, at a maximum depth of 5 feet, to facilitate communication.	40 acres	50 feet
PG&E Components			
PG&E Owned Portion of Gen-tie Line	230 kV generation-tie line, extending from the offsite POCO pole to the existing PG&E-owned Tranquillity Switching Station, approximately 1,000 feet in length. Portions of this line may be either aboveground or underground. For aboveground sections, each of three (3) pole structures would be up to 160 feet above ground surface, made of steel, wood or an equivalent, and accommodate either a single-circuit or double-circuit configuration. Maximum foundation dimensions for pole structures would be 10 feet in diameter and up to approximately 50 feet deep. Fiber lines may be placed on the gen-tie line or in underground conduits, at a maximum depth of 5 feet, to facilitate communication.	2 acres	50 feet
PG&E's Tranquillity Switching Station	PG&E upgrades at the existing Tranquillity Switching Station would include installing a new 230 kV breaker-and-a-half bay. A microwave pole or tower also may be installed at Tranquillity Switching Station. All upgrades anticipated to be within the existing footprint of the Tranquillity Switching Station.	2 acres	50 feet

NOTES:

1. The acreages provided for each Project component are an approximate maximum and subject to change during final design. The total Heartland Solar Project footprint of 2,362 acres will remain consistent, but there may be adjustments in the allocation of size between components (e.g., solar arrays, BESS) to optimize Project efficiency and performance.
2. MW_{AC} means the electric power, in megawatts associated with alternating current. It is a measurement of the expected nominal generating capacity of a PV solar project. 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 proposed location of the Project substation would require an approximately 5-mile-long gen-tie line. Of the total 5-mile length, 2 miles would be constructed, operated and maintained outside the solar site boundary. All 5 miles would be the responsibility of Heartland Solar 1, LLC. The width of the right-of-way (ROW) within which transmission line structures would be erected has not been determined; however, a typical 230 kV double-circuit ROW would be 150 to 200 feet wide. A wider ROW would allow for longer pole spacing, resulting in fewer poles being needed. As shown on Figure 2-3, *Site Plan*, the analysis in this EIR assumes that the gen-tie line ROW for this Project would be 150 feet wide.

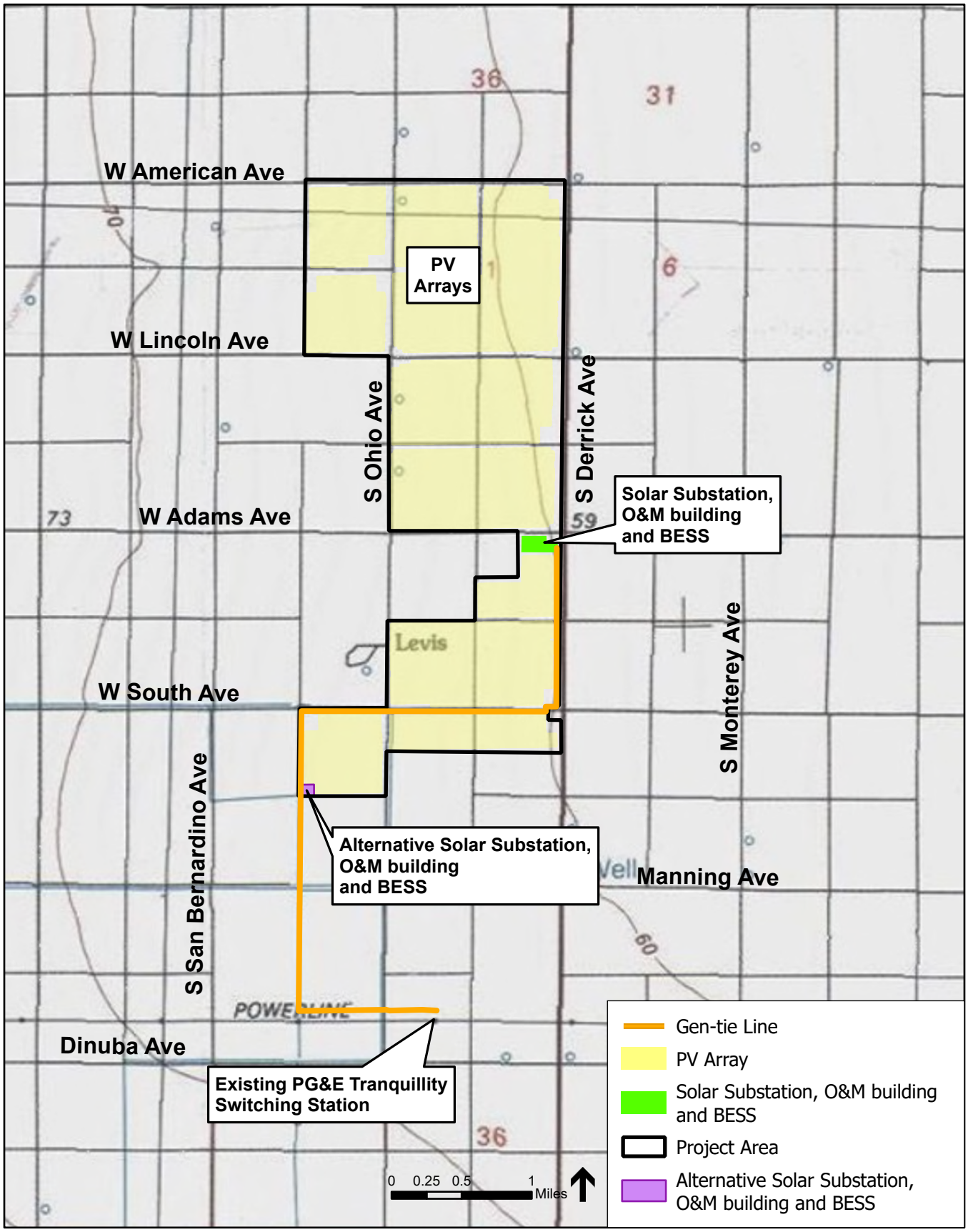


SOURCE: USGS 7.5' Topographic Quadrangle (Coit Ranch, CA; Levis, CA; Mendota Dam, CA)

Heartland Solar Project

Figure 2-1

Regional Location



SOURCE: USGS 7.5' Topographic Quadrangle (Coit Ranch, CA; Levis, CA)

Heartland Solar Project

Figure 2-2
Project Site

TABLE 2-2
PROJECT PARCEL DETAILS

Parcel Number	Current Owner	Zoning	Non-Irrigation Covenant	Project Component
028-060-32	WWD	AE-20	No	Heartland Solar Project
028-060-33	WWD	AE-20	No	Heartland Solar Project
028-140-38	WWD	AE-20	No	Heartland Solar Project
028-060-41	WWD	AE-20	Yes	Heartland Solar Project
028-060-70	Luna Valley Land Holdings LLC	AE-20	No	Heartland Solar Project (offsite/gen-tie)
028-101-15	Luna Valley Land Holdings LLC	AE-20	No	Heartland Solar Project (offsite/gen-tie)
028-101-69	Luna Valley Land Holdings LLC	AE-20	No	Heartland Solar Project (offsite/gen-tie)
028-101-81	PG&E	AE-20	No	PG&E Components (offsite)
028-101-82	RE Tranquillity Landco LLC	AE-20	No	Heartland Solar Project and PG&E Components (offsite/gen-tie and Tranquillity Substation)
028-140-23	WWD	AE-20	No	Heartland Solar Project
028-140-32	WWD	AE-20	Yes	Heartland Solar Project
028-140-36	WWD	AE-20	Yes	Heartland Solar Project
028-140-37	WWD	AE-20	Yes	Heartland Solar Project
028-160-16	WWD	AE-20	Yes	Heartland Solar Project
028-160-17	WWD	AE-20	Yes	Heartland Solar Project
028-160-19	WWD	AE-20	Yes	Heartland Solar Project
028-160-20	WWD	AE-20	Yes	Heartland Solar Project
028-160-22	WWD	AE-20	Yes	Heartland Solar Project
028-170-17	WWD	AE-20	No	Heartland Solar Project
028-170-18	WWD	AE-20	No	Heartland Solar Project
028-170-41	WWD	AE-20	No	Heartland Solar Project
028-170-42	WWD	AE-20	No	Heartland Solar Project
028-170-43	WWD	AE-20	No	Heartland Solar Project
028-170-44	WWD	AE-20	No	Heartland Solar Project
028-170-45	WWD	AE-20	No	Heartland Solar Project
028-170-46	WWD	AE-20	No	Heartland Solar Project
028-170-47	WWD	AE-20	No	Heartland Solar Project
028-170-48	WWD	AE-20	No	Heartland Solar Project
028-170-60	WWD	AE-20	No	Heartland Solar Project
028-170-61	WWD	AE-20	No	Heartland Solar Project

NOTES: AE-20 = Exclusive Agricultural District (20-acre minimum parcel size); WWD = Westlands Water District
SOURCE: Fresno County, Heartland Solar 1, LLC 2024

2.3 Existing Land Uses

2.3.1 Heartland Solar Project site

The Heartland Solar Project site is within the AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) Zone District. Irrigated agriculture historically occurred here; however, due to a combination of factors including lack of drainage, salt accumulation in the soil, and a legal covenant that precludes irrigation for many of the parcels, the sites no longer support irrigated agricultural land uses. None of the land receives an allocation of surface water from the Westlands Water District (WWD). In the past 10 years, the Project site has been intermittently dry farmed for grain or forage crops or has lain fallow. Abandoned irrigation and drainage features are present throughout the site but are not in use. No existing lighting is present on the site. WWD cultivates the site to control weeds and pests. Unimproved farm roads exist on the site and between the parcels that would be developed as part of the Project. The only improved (paved) roads bordering the Project site boundary are W. Adams Avenue and SR 33.

Surrounding land uses consist of existing agricultural uses, including non-irrigated fields owned mostly by the WWD. These properties generally have a land use pattern of dry farming, grazing and fallowing rotation that is similar to the Project site. Neighboring agricultural uses include orchards and forage and grain crops. Multiple solar facilities are operating or under development in the surrounding area, including the Tranquillity, Adams East, Luna Valley, Scarlet, and Sonrisa solar projects. The nearest residence to the Project site is located at W. Adams and S. Ohio Avenue, approximately 80 feet from the Project site boundary. The nearest communities include the community of Tranquillity (approximately 8 miles to the east-northeast of the Project site), City of Mendota (approximately 6 miles to the north), and City of San Joaquin (approximately 11 miles to the east).

2.3.2 PG&E Components

Existing uses of the Tranquillity Switching Station site are energy related. The switching station is a 230-kilovolt (kV) switching station situated on approximately 2 acres of land within a 6-acre area owned by PG&E. It originally was built to interconnect the Tranquillity Solar Project to the portion of California's energy grid that is also owned and operated by PG&E. Tranquillity Switching Station now interconnects multiple renewable energy projects in the area, including the Tranquillity, Adams East, Luna Valley, Scarlet, and Sonrisa solar projects. Within the Tranquillity Switching Station, 230 kV transmission lines, tubular steel poles, fiber optic communications cabling, and related energy facilities are present. PG&E would follow typical best management practices for their components of the Project.

2.4 Project Objectives

California Environmental Quality Act Guidelines Section 15124(b) requires an Environmental Impact Report to include a "statement of the objectives sought by the proposed project." It further explains, "A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in

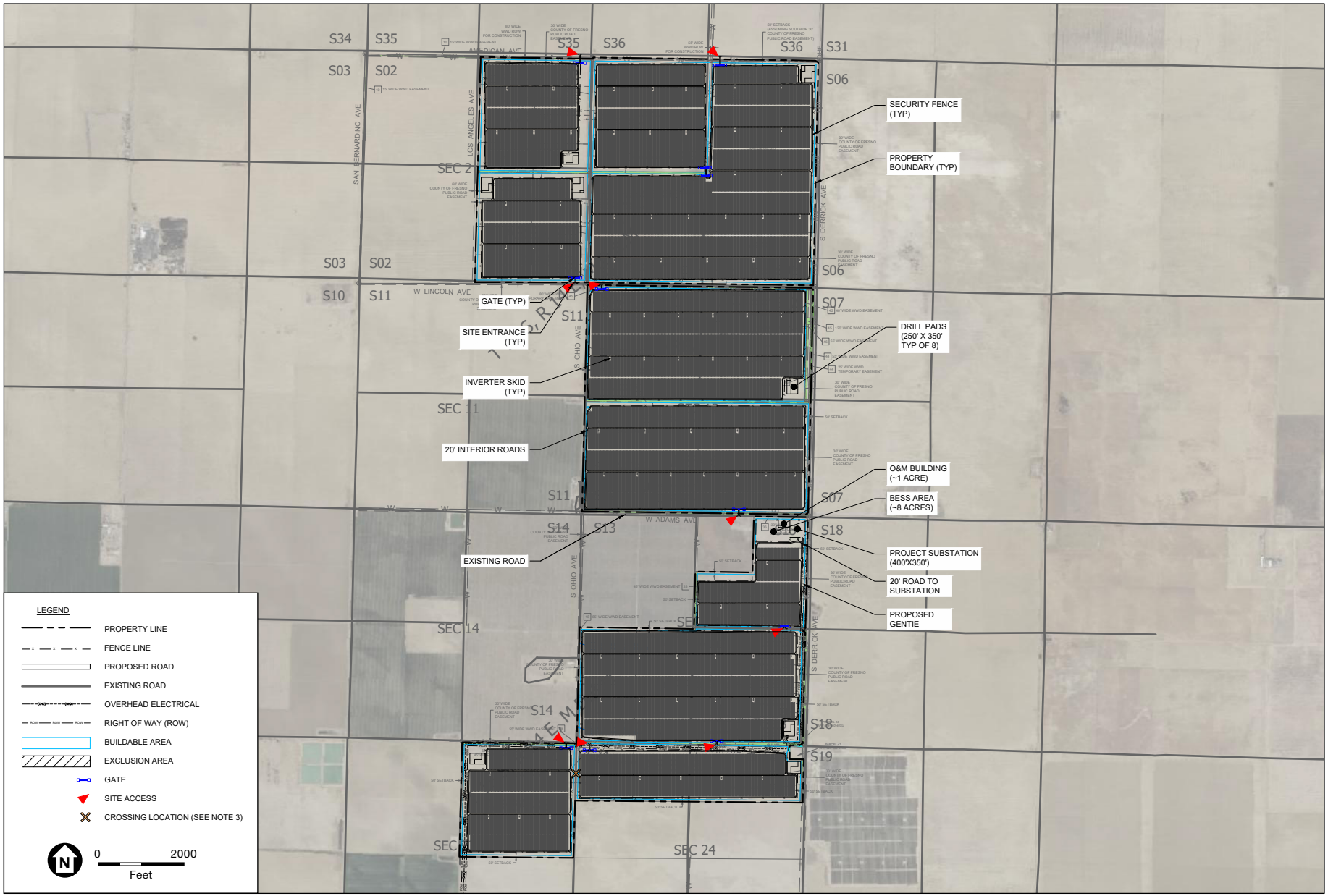
preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits." Heartland Solar 1, LLC has identified the following objectives for the Heartland Solar Project:

1. Establish a photovoltaic (PV) renewable solar energy power-generating facility of a sufficient size and configuration to produce up to approximately 300 megawatts alternating current (MW_{AC}) of electricity in a cost-competitive manner.
2. Establish an energy storage system of a sufficient size and configuration to store up to approximately 300 MW_{AC} of electricity for at least four-hour discharge in a cost-competitive manner.
3. Assist California load-serving entities in meeting their obligations under California's Renewable Portfolio Standard (RPS) Program and Senate Bill 100, which calls for 60 percent of all electricity sold in California to come from renewable sources by 2030, and 100 percent by 2045.
4. Assist California load-serving entities in meeting their obligations under the California Public Utilities Commission's Energy Storage Framework and Design Program.
5. Provide for the economically viable, commercial financeable, and environmentally beneficial use of lands.
6. Develop a renewable PV solar energy and energy storage project in proximity to transmission infrastructure in order to minimize environmental impacts.
7. Create jobs and tax revenue for Fresno County.

2.5 Description of Project Components

2.5.1 Heartland Solar Project Components

The Project would consist of arrays (groupings or blocks) of PV solar modules to convert sunlight into electrical power. Power generated by the panels would be transmitted to an electrical inverter located centrally within the array block. The inverter would convert the direct current (DC) power from the arrays into alternating current power, which in turn would be stepped up to medium voltage (34.5 kV) to transmit the power from the solar arrays to the proposed onsite solar facility substation. The power collected at this substation would be further stepped up to high voltage (230 kV) for transmission to and interconnection with the Tranquillity Switching Station. The total length of the gen-tie line would be approximately 5 miles long; the portion outside of the solar facility would be approximately 2 miles long. The proposed Project site plan is depicted in **Figure 2-3**, *Site Plan*.



SOURCE: Revamp Engineering, Inc., 2025

Heartland Solar Project

Figure 2-3
Site Plan

ESA

2.5.1.1 Photovoltaic Solar Generating Components

The solar facility would be constructed using PV modules of cadmium telluride semiconductor also known as thin-film modules or crystalline silicon semiconductor modules. The PV modules would be mounted on horizontal, single axis tracker systems. The module arrays would be arranged in north-south oriented rows and drive motors would rotate the horizontally mounted solar panels from east to west to follow the sun throughout the day. The facility would use solar panels that have a low profile: typically 6 feet high, but generally no more than 18 feet high at the highest point during the day, which would be achieved during the morning and evening hours when the trackers are tilted at their maximum angle (i.e., either to the east or west, respectively). The trackers' typical support system consists of steel posts driven into the ground with steel table frames bolted to driven posts.

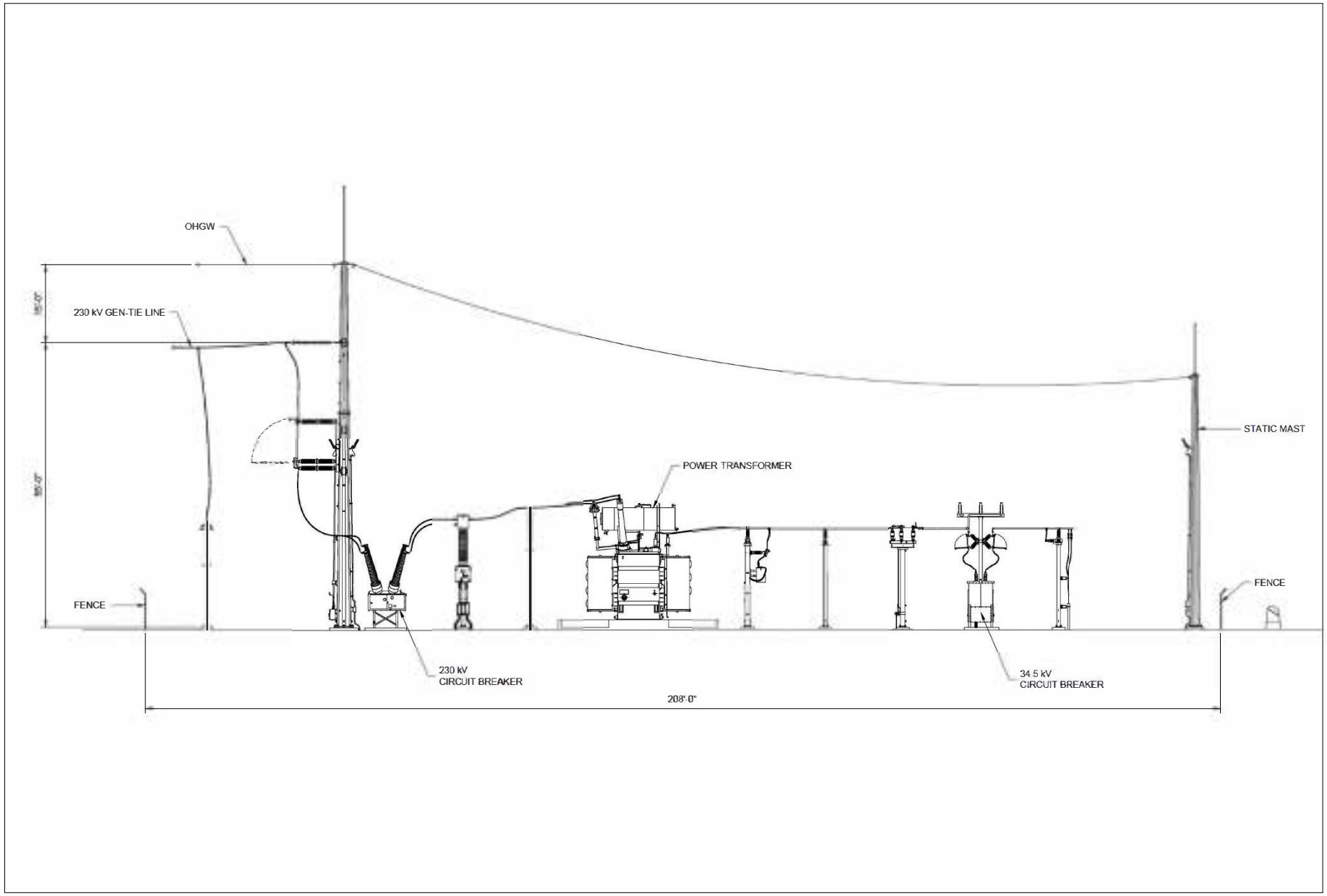
2.5.1.2 Electrical Collection System

PV modules convert sunlight into DC electricity. The DC electricity generated by the PV modules would be collected and converted into AC electricity through the inverters and stepped up to 34.5 kV and delivered through an underground or overhead system to the onsite solar facility substation. Depending on the connection system design, each array would have a power conversion system (PCS) containing inverters and medium voltage transformers, as well as other electrical equipment. Inverters convert DC power from the arrays to AC power. Transformers would step up the AC voltage from the inverters to 34.5 kV to deliver the power to the collection system and to the proposed solar facility substation.

2.5.1.3 Solar Facility Substation

The proposed solar facility would have a dedicated onsite high-voltage substation within an approximately 4-acre area. The substation would be separately fenced to accommodate high voltage electrical equipment at one of two locations currently being contemplated: The substation would be located either at the southern end of the Project site (nearest to the Tranquillity Switching Station) or closer to the southwest corner of the intersection at W. Adams Avenue and SR 33. The substation may include one or more 230 kV transformers, transformer fluid containment area circuit breakers, capacitor banks, a 120-foot-tall microwave tower, lightning protection, and metering and a control enclosure(s).

Each high voltage transformer would contain dielectric fluid formulated from mineral oil. Breakers would be filled with sulfur hexafluoride gas, which acts as an insulator. To provide for onsite containment in the event of a transformer leak, a transformer containment area would be installed using either pit design and/or impermeable membrane liner covered with gravel and would include a drain with a normally closed drain valve. The containment system would be designed to accommodate the volume of dielectric fluid (mineral oil) in the transformers plus an allowance to accommodate precipitation from storm events. An elevation profile for the substation is provided in **Figure 2-4**, *Solar Facility Substation*.



SOURCE: Plug Power, Inc., 2021

Heartland Hydrogren Project

Figure 2-4
Solar Facility Substation

ESA

2.5.1.4 Energy Storage System

Within the Project site, an area of up to 20 acres would be designated near the substation for use as an onsite energy storage system. The energy storage technology ultimately selected could be lithium ion, sodium-sulphur, or vanadium-redox flow technology. The energy storage system area would be co-located with the substation, connected by underground, medium-voltage (34.5 kV) lines, and separately fenced for safety and security, or distributed throughout the solar arrays at each inverter. Self-contained energy storage modules would be placed in racks within prefabricated metal enclosures. Switchboards; integrated heating, ventilation, and air conditioning (HVAC) units; a fire detection system; inverters; and transformers would be provided. Although a final enclosure design decision would not be made until after Project approval, enclosures would be no taller than approximately 10 feet tall and 30 feet wide regardless of final design. The energy storage system area would consist largely of compacted, native soil. The enclosures and related equipment would be mounted on concrete foundations or steel piles.

2.5.1.5 Generation Tie Line

The Project would interconnect to the regional electrical grid at PG&E's existing Tranquillity Switching Station via a gen-tie line. The final route of the proposed line would depend on the location selected for the Project substation. Preliminarily, however, it is assumed that the portion of the gen-tie line outside of the solar facility would be approximately 2 miles long (10,560 linear feet), necessitating 20 monopole or lattice structures to be spaced at approximately 600-foot intervals. If the central substation location is utilized, the portion of the gen-tie line inside the solar facility would be approximately 3 miles long. The gen-tie line would exit at the southwestern-most corner of the solar facility, extend along S. Los Angeles Avenue for approximately 1.3 miles, then extend east for approximately 0.7 mile, and terminate at the Tranquillity Switching Station.

An approximately 1,000-foot-long portion of the overall gen-tie line (from the last pole to Tranquillity Switching Station) would be owned and operated by PG&E. The PG&E portion would extend from the offsite point of change of ownership (POCO) pole to the existing PG&E-owned Tranquillity Switching Station and comply with CPUC General Order 95's minimum clearance requirements. The POCO pole would be installed with a manual disconnect switch for safe maintenance activities. The PG&E gen-tie line structures would accommodate either a single-circuit or double-circuit configuration and would be steel, wood or an equivalent. A portion of the gen-tie or fiber-optic communication line may be placed underground as it enters the Tranquillity Switching Station (Carbajal, pers. comm., 2024).

The type of foundations to be used for the gen-tie line structures has not yet been determined. For purposes of analysis, this EIR assumes that foundations could be embedded, drilled shaft, or a vibratory caisson type. The *direct embed* method involves installation of the pole directly into the ground and then securing it with a concrete stabilizer. For a *drilled shaft* foundation, a hole would be drilled using a rotary auger, a surface casing would be installed to prevent soil close to the surface of the hole from caving in, a reinforcing cage could be placed to stabilize in the upper portion of the drilled shaft, the pole would be placed, and then reinforced concrete would be used to secure it. Vibratory caisson foundations are hollow pole bases that are vibrated into the earth and require no excavation, concrete, or fill. Regardless of the type of pole foundation ultimately

selected, the EIR assumes that maximum foundation dimensions would be 10 feet in diameter and up to approximately 50 feet deep.

2.5.1.6 Telecommunications Facilities

Multiple communication systems would be used during construction and operation of the Project. These systems would include telephone, fiber lines for primary communication between the Project substation and the Tranquillity Switching Station, and T1[1] internet or equivalent. Underground fiber optic lines also may be installed between the Project substation and the Tranquillity Switching Station. Wired or wireless telecommunications facilities service would be provided by a local provider; alternatively, the Project applicant may install hard wired (land line) systems underground or on overhead lines, as part of the electrical installations, or would supplement with proposed microwave or satellite communications. A 120-foot-tall microwave satellite tower may be installed and could require a concrete pier foundation up to 5 feet in diameter and 20 feet deep.

2.5.1.7 Supervisory Control and Data Acquisition System

A Supervisory Control and Data Acquisition (SCADA) system would be installed to allow for remote monitoring and control of inverters and other facility components, including the energy storage system if one is constructed. The SCADA system would monitor solar facility functional output and availability and would run diagnostics on equipment. SCADA system equipment would be located in either metal or precast concrete enclosures within the operations and maintenance (O&M) or substation area.

2.5.1.8 Operation and Maintenance Area

The Project site would include an overall O&M area of up to 3,000 square feet. The O&M area would accommodate an O&M building, parking area for approximately seven cars, and other associated facilities such as above ground water storage tanks, sanitary septic system, security gate, communications enclosures, storage containers, storage area, trash containers, and signage. The O&M building itself would house communication equipment, storage and equipment area, offices, restrooms, and necessary administrative, operation, and maintenance equipment and personnel. It would have a maximum height of 20 feet.

2.5.1.9 Meteorological Data Collection

Approximately five meteorological stations each including an approximately 20-foot-tall meteorological tower and various sensors would be installed around the perimeter of the solar array field to collect data related to the weather and environment. The towers would have a monopole design and require a concrete foundation measuring approximately 2 feet by 2 feet that would extend approximately 4 feet below the ground surface depending on soil conditions. The sensors may include thermometer(s) for temperature readings, a barometer to measure atmospheric pressure, and other sensors to measure rain, wind, and humidity.

[1] A *T1 line* is a dedicated connection between a telecommunications service provider and client that can carry more data than a traditional standard analog line.

2.5.1.10 Access, Internal Circulation, and Signage

Worker traffic (anticipated to be passenger cars) would approach the Project site on State Route (SR) 33 or W. Manning Avenue. From Interstate 5 (I-5), traffic would exit at W. Manning Avenue and head east towards the Project site. Alternatively, traffic would exit I-5 at SR 33 and head north toward the Project site. Construction equipment and material deliveries would check in with the offload crew at the access points off of W. Adams Avenue, which is the only improved (paved) County road within the boundary of the Project site. Construction vehicle traffic would be required to approach the Project site from SR 33 then onto W. Adams Avenue and would be prohibited from traveling west of S. Ohio Avenue on W. Manning Avenue. The Project would have no points of access directly onto or from SR 33.

Driveways would be paved with asphalt to optimize the traffic flow into and out of W. Adams Avenue and would be a minimum of 24 feet wide. Driveway design characteristics such as corner sight distance and approach and departure tapers would follow County encroachment permit requirements. Entrances may be secured from public access by an unmanned remotely operated security gate. Materials and equipment would be either stored at the laydown yard at that location or directed to the offload location within the Project site. These deliveries are expected to occur dispersed throughout the day and would not occur during peak commuting hours so that workers are on site and able to receive the deliveries when they arrive.

Interior roadways within the Project site would be up to 20 feet wide and constructed of compacted native soil and/or gravel. All interior roads would be subject to a speed limit of 20-mph for safety and to minimize the generation of dust. Signage would be installed at the Project's main entrances to identify the facility owner and operator and to provide emergency contact information. For security purposes, small scale signs would be posted along the perimeter fence to indicate "no trespassing" and "private property." Safety signs also may be posted at the perimeter fence.

The Project site includes unmaintained County road easements within the Heartland Solar Project boundary that could be vacated as part of the Project, including two along S. Ohio Avenue, which runs north-south through the Heartland Solar Project site; one along W. Lincoln Avenue, where it separates Heartland Solar Project Area 3 and Area 4; and one along W. South Avenue, where it separates Heartland Solar Project Area 7 and Area 8a. See Figure 3.18-1, *Local Roadways*, in Section 3.18, *Transportation*.

2.5.1.11 Deliveries, Shipments, and Authorized Individuals

The Project is not intended to be "visitor serving." No goods or services would be offered for sale from the site. Access to the site would be limited to employees and authorized visitors only. Authorized individuals would include construction workers and others needed to conduct administrative and O&M-related activities, commercial service deliveries, and solid waste and recycling collection. Occasional tours and other site visits for individuals and small groups (e.g., fewer than 10 people) could occur but would be infrequent, and pre-arranged with the facility. Anticipated inbound and outbound truck trips are estimated in Section 2.5.4, *Operation and Maintenance*.

2.5.1.12 Fencing, Lighting, and Site Security

Onsite security would be achieved through a combination of fencing, lighting, security patrols, and/or security cameras and other electronic security monitoring systems as needed. The facilities would be secured with approximately 6- to 7-foot-high chain-link (or other wire) fencing, with the top 1 foot comprising barbed wire strands.

Lighting would be provided at the substation, O&M building, energy storage system area, and main entrance as necessary for the safety and security of employees and the facilities. Any permanent lighting would be shielded or directed downward. Lighting for outdoor locations that are only occasionally visited would be controlled from local switches or photoelectric controllers (motion-activated) and wattage would be no higher than needed for safety purposes to reduce offsite/dark-sky light pollution. Portable lighting would be used throughout the site by O&M staff on an as-needed basis.

2.5.1.13 Water Supply and Use

Water demand is expected to be approximately 400 acre-feet (af) for the entire 40-month construction period (Appendix L, *Water Supply Assessment*). The specific sources of water supply for the Project would primarily include groundwater owned by WWD and supplied via WWD infrastructure. This infrastructure would likely be one or more groundwater wells within the Project area or adjacent to it. It may also include the use of a water broker to find and facilitate the sale of supplemental surface water for Project use, which would be delivered via WWD municipal and industrial infrastructure.

During the O&M phase, the Project could require up to approximately 5 acre-feet per year, or 175 af total, primarily consisting of non-potable water for PV solar panel washing and other uses. However, if panel washing is not needed, then water use for routine solar facility O&M activities would be approximately 1 acre-foot per year. Water for non-consumptive uses (e.g., sinks and toilets) would be provided by groundwater or surface water owned by WWD. Drinking water would be provided by commercial water services (Appendix L).

Total water use over the combined construction and O&M period would be up to approximately 575 af, or 187 million gallons (Appendix L).

2.5.1.14 Sanitation

The Project would install an in-ground septic system to manage sanitary waste. The capacity of the septic tank and dimension of the leach field would be determined based on anticipated use and site-specific soil conditions among other factors, as required by the Fresno County Local Agency Management Program (LAMP) (County of Fresno 2018, 2019).

2.5.1.15 Waste Generation

The Project would generate a small amount of waste as part of normal O&M activities. Typical waste may include broken or rusted metal, defective or malfunctioning equipment, electrical materials, empty containers, miscellaneous solid waste, and typical refuse from O&M staff.

Approximately 1 cubic yard of waste per week is anticipated and would be collected weekly by a commercial waste management service.

2.5.1.16 Hazardous Materials

Routine O&M activities may involve the transportation, use, or temporary storage of hazardous materials during the ordinary course of work. Such materials may include batteries, hydraulic fluid, diesel fuel, insulation oil for the transformers, grease, lubricants, paint, solvents, and adhesives. Smaller quantities (i.e., consumer-size containers) of common, commercially available maintenance chemicals also would be used, including solvents, degreasers, lubricants, paints and other coatings. All hazardous materials used onsite would be stored, handled, and disposed of in accordance with the manufacturers' specifications and consistent with all applicable regulatory requirements. Workers would be trained to engage in safe work practices and to properly identify and handle any hazardous materials onsite and to prevent accidental release.

2.5.1.17 Stormwater Management

Site preparation and construction would be performed in accordance with a stormwater pollution prevention plan or similar plan that includes stormwater best management practices to reduce the adverse effects of construction-related and decommissioning-related erosion and sedimentation. Further, to manage stormwater during the O&M phase if deemed necessary based on pre-construction design analysis and County of Fresno grading requirements, onsite detention or retention basins may be constructed, operated, and maintained to retain stormwater that could otherwise runoff in a storm event. The basins would be expected to remain dry except during or soon after a rain event.

2.5.2 Summary of PG&E Components

To interconnect and support the Project, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. As explained in Section 2.5.1.5, *Generation Tie Line*, approximately 1,000 linear feet of the offsite gen-tie line would be owned and operated by PG&E. As explained in Section 2.5.1.6, *Telecommunications Facilities*, fiber lines and other communications equipment (potentially including a microwave pole or tower) also would be owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. Expansion of the fenced footprint of the existing Tranquillity Switching Station is not required.

2.5.3 Construction

2.5.3.1 Grading and Site Preparation

Site preparation for construction generally would proceed as follows:

1. Conduct pre-construction biological surveys to satisfy the applicable permit requirements.
2. Establish and mark the limits of the site boundary and rights-of way, mark and locate utilities and other constraints by surveying and staking.

3. Install sediment and erosion controls and stabilize construction entrances to reduce track out and manage stormwater.
4. Install fencing around Project perimeter, including temporary fencing around construction logistics area(s). Establish water filling stations for dust control.
5. Designated staging, laydown areas (to stage and secure equipment and construction materials) and parking for construction personnel would be established upon the site.
6. Conduct debris and vegetation removal as necessary.
7. Prepare site using a combination of mowing, disk and roll, micrograding and conventional grading.
8. Trench as necessary.
9. Construct and excavate foundation pads.
10. Conduct grading for drainage and stormwater retention basins per County approved grading and drainage plans.

2.5.3.2 Construction of the Project Substation

The Project substation would be constructed in compliance with applicable electrical safety codes. Substation construction would consist of site grading, concrete equipment foundation forming and pouring, crane-placed electrical and structural equipment, underground conduit and cabling, grounding arrays, overhead cabling and cable termination, ground grid trenching and termination, control building erection, and installation of all associated systems including, but not limited to HVAC system components, distribution panels, lighting, communication and control equipment, and lightning protection. The substation would be separately fenced to provide increased security around the medium- and high-voltage electrical equipment.

2.5.3.3 Operation and Maintenance Area Construction

The O&M area would include a permanent building constructed atop a poured concrete or steel piles foundation. The driveway and parking area would be compacted native soil and/or road base aggregate. Construction of O&M buildings would be subject to state and local building codes and design standards.

2.5.3.4 Energy Storage System Construction

Construction of the proposed energy storage system would include moving prefabricated enclosures or buildings with a crane or forklift to appropriate locations. Locations would depend on final design decisions and could require construction of concrete foundations or usage of steel piles to support energy storage system components. The energy storage system would include electrical switching and transformers and would electrically connect to the solar facility substation via buried, medium-voltage electrical cable. Soil from trenching would be used to backfill the trench following placement of the cable. Any excess soil would be used or disposed of elsewhere on the Project site.

2.5.3.5 Generation Tie Line Construction and Stringing

The Project would require construction of up to approximately 60 new structures for the gen-tie line. Analysis assumes that up to 57 of the structures would be constructed by Heartland Solar 1, LLC and, for the PG&E-owned portion of the gen-tie line, approximately three of which would be constructed by PG&E. During the construction, the location of each structure would be surveyed and staked. Foundations for each structure would be constructed, the structures would be erected, and pole arms and insulators would be installed. Once structure installation is complete, conductor stringing and terminations would be performed to ensure the new lines are operating correctly. Construction may also involve installing a portion of the gen-tie line underground. Construction would require temporary work areas at each new structure and at locations required for conductor stringing and pulling operations. Each stringing and pulling operation is expected to consist of a puller set-up positioned at one end and a tensioner set-up with wire reel stand truck positioned at the other end. The dimensions of the area needed for the wire stringing set-ups would be variable and depend upon terrain. For purposes of analysis, this EIR assumes that such activities generally require an area of approximately 50 feet wide by 300 feet in length.

2.5.3.6 Tranquillity Switching Station Upgrades

Construction of the upgrades to PG&E's Tranquillity Switching Station would include the following work within the current perimeter fence: drilling caisson foundations, pouring concrete pads, installing drainage improvements, compacting soil and placing gravel, erecting high voltage buswork with supporting steel structures and insulators, installing cable trenches, trenching for grounding, conductors, or fiber optics, and installing high voltage circuit breakers, switches, and other equipment as required to construct a new breaker-and-a-half configuration. No expansion of the perimeter fence footprint is required. New structures and equipment would be similar in appearance and size to those already installed in Tranquillity Switching Station.

2.5.3.7 Project Construction Equipment

Anticipated construction equipment fleet mix and engine tier assumptions (as analyzed in Section 3.4 and Appendix D1, *Air Quality and Greenhouse Gas Emissions Technical Report*) are identified in **Table 2-3**, *Project Construction Equipment*. Although the final construction parameters cannot be known with certainty at the time the Draft EIR is being prepared, the analysis assumes that actual equipment needs would fall within the following parameters.

2.5.3.8 Project Construction Schedule and Workforce

The Project facilities may have a different completion date depending on the availability of labor and equipment lead times. Due to interconnection upgrade timing, the BESS portion of the Project must be constructed after the solar portion of the Project. This would result in an approximately 40-month construction duration. Construction of the solar portion of the Project is expected to require approximately 18 months. This would be followed by solar commissioning and BESS construction, which would require an approximately 22-month duration.

TABLE 2-3
PROJECT CONSTRUCTION EQUIPMENT

Construction Phase	One-Way Vehicle Trips			Equipment			
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total Haul Truck Trips	Equipment Type	Engine Tier Rating	Quantity	Daily Usage Hours
Move-on (laydown, construction trailers, and parking area) – Solar Facility	20	10	20	Graders	3	2	6
				Rubber-Tired Dozers	4	1	6
				Scrapers	3	2	6
				Rubber-Tired Loaders	4	2	6
				Tractors/Loaders/Backhoes	4	2	6
				Skid Steer Loaders	4	3	6
				Generator Sets	4	1	24
Solar Facility Substation Construction	20	2	40	Generator Sets	4	1	12
				Other General Industrial Equipment	4	1	4
				Tractors/Loaders/Backhoes	4	1	4
				Cranes	4	1	5
				Rough-Terrain Forklifts	4	2	4
				Aerial Lifts	4	1	4
				Graders	4	1	6
				Rubber-Tired Dozers	4	1	3
				Scrapers	3	1	4
				Rubber-Tired Loaders	4	1	3
				Excavators	4	1	4
				Tractors/Loaders/Backhoes	4	1	6
Gen-Tie Line Installation – Solar Facility	20	2	40	Tractors/Loaders/Backhoes	4	1	4
				Cranes	4	1	4
				Crawler Tractors	4	1	4
				Bore/Drill Rigs	4	1	2
				Rough-Terrain Forklifts	4	1	4
				Other Construction Equipment	4	1	4
				Generator Sets	4	1	4
Site Preparation and Grading – Solar Facility	150	10	0	Pumps	4	2	8
				Graders	3	2	8
				Rubber-Tired Dozers	4	1	3
				Scrapers	4	3	6
				Rubber-Tired Loaders	4	3	6
				Tractors/Loaders/Backhoes	3	2	6
				Tractors/Loaders/Backhoes	3	2	6
				Rollers	4	1	3
				Skid Steer Loaders	4	2	6

Construction Phase	One-Way Vehicle Trips			Equipment			
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total Haul Truck Trips	Equipment Type	Engine Tier Rating	Quantity	Daily Usage Hours
				Generator Sets	4	1	24
				Generator Sets	4	1	24
Underground Work (Trenching) – Solar Facility	80	10	0	Tractors/Loaders/Backhoes	4	1	6
				Trenchers	4	1	6
				Plate Compactors	4	1	4
				Excavators	4	1	4
				Trenchers	4	4	6
				Crushing/Processing Equipment	4	1	6
				Tractors/Loaders/Backhoes	3	2	4
				Rollers	4	2	2
System Installation – Solar Facility	800	10	400	Rough-Terrain Forklifts	4	5	4
				Aerial Lifts	4	3	4
				Skid Steer Loaders	4	10	4
				Air Compressors	4	1	6
				Other Construction Equipment	4	15	6
				Generator Sets	4	1	24
				Generator Sets	4	1	24
Cleanup/Testing/ Restoration – Solar Facility	50	6	0	Tractors/Loaders/Backhoes	3	1	4
				Graders	3	1	6
				Scrapers	3	2	6
Battery/Container Installation	25	7	352	Rubber-Tired Loaders	4	1	8
				Excavators	4	1	8
				Rough-Terrain Forklifts	4	2	8
				Cranes	4	1	8
				Graders	3	1	8
				Skid Steer Loaders	4	2	8
				Welders	4	1	8
				Generator Sets	4	1	8
				Bore/Drill Rigs	4	1	8

SOURCES: Appendix A, Solar Facility Construction Emissions, of Appendix D1, *Air Quality and Greenhouse Gas Emissions Technical Report*.

Construction would generally occur between the hours of 6:00 a.m. and 7:00 p.m., Monday through Friday. Additional hours, including weekend work, may be necessary to make up schedule deficiencies, or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid work during high temperatures. Construction may require some nighttime activity for installation, service or electrical connection, inspection, and testing activities. Nighttime activities would be performed with temporary lighting.

All work on the solar and energy storage facilities site would adhere to Fresno County requirements related to noise and nuisance. It is expected that an average of 375 workers would be onsite to construct the solar and energy storage facilities, with a maximum of 625 workers at the peak of construction. Workers would likely be drawn from the Fresno County labor pool but may come from neighboring communities depending on the contractors selected to construct the Project.

The construction schedule and workforce for the PG&E Components has not been confirmed but related needs are assumed to fall within the overall parameters of the Project's requirements.

2.5.4 Operation and Maintenance

2.5.4.1 Operation and Maintenance of the Heartland Solar Project

The Project would generate energy during daylight hours. Operation and maintenance of the facility would require onsite personnel consisting of administrative and management personnel, operators, and maintenance staff. Except for security personnel (who would be onsite up to 24 hours per day, 7 days per week), O&M staff typically would work during regular business hours (e.g., between 8:00 a.m. and 6:00 p.m.) Monday through Friday. Approximately three staff members typically would be onsite to conduct periodic, routine visual inspections and minor repairs. Larger crews of up to 10 workers would be required to perform other tasks such as equipment maintenance or replacement. Non-routine (emergency) maintenance or major repairs could require additional workers and could require work to occur during evening or nighttime hours when the solar facility is not generating power.

The solar modules at the solar facility site would operate during daylight hours, 7 days a week, 365 days a year. The maintenance protocol would consist mainly of routine inspections. Preventive maintenance kits and certain critical spare equipment would be stored onsite. During the first year of operation, inspections that otherwise would occur semi-annually would be performed quarterly, inspections that otherwise would occur annually would be performed semi-annually to identify initial issues that may arise early in the solar facility's life. At designated intervals, approximately every 10 to 15 years, major equipment maintenance would be done.

The energy storage charge and discharge times would be dictated by the grid operator or energy scheduler, which may occur at any time of day, while maintenance would be managed by Heartland Solar 1, LLC. The storage system maintenance protocol would be similar to the solar facility protocol. Battery augmentation activities would also occur at designated intervals, approximately every one to five years, which would include replacement or addition of new energy storage modules and require a crew of approximately 25 workers. The foundations and underground components of all augmentation modules would be installed during the construction phase, so no new ground disturbance is anticipated during operations.

Operation and maintenance would require the use of vehicles and equipment including crane trucks for major equipment maintenance, mowers or other vegetation management equipment, and additional maintenance equipment such as forklifts, manlifts, and chemical application equipment for weed abatement. Pick-up trucks would be in daily use on the site. No heavy

equipment would be used during normal plant operation. The solar facility would receive service power from PG&E and could have emergency generators available onsite.

2.5.4.2 Operation and Maintenance of the PG&E Components

Operation and maintenance of the PG&E Components would include multiple inspections per year. Replacement of hardware, insulators, conductor, fiber, microwave structures (if used), or other structures would occur as needed for the life of these assets and would primarily be completed using bucket trucks and ground equipment such as pick-up trucks and cranes. Maintenance using a helicopter would be rare and, if needed, would occur substantially in conformance with existing O&M activity along the line (Carbajal, pers. comm., 2024). Operation and maintenance of the upgrades at the Tranquillity Switching Station would include inspections using man-lifts. Replacement of equipment and hardware would occur as needed for the life of this asset and primarily would be completed using man-lifts, bucket trucks, cranes, and heavy equipment for grading work.

2.5.5 Decommissioning and Site Reclamation

2.5.5.1 Heartland Solar Project Site

The Project site would be prepared for decommissioning and reclamation to a condition comparable to the environmental conditions in effect at the time of initial construction. Site decommissioning is anticipated to require approximately one year and up to 70 workers and would entail removal of all Project equipment and demolition of all site structures and foundations within the solar and energy storage facilities site up to 3 feet below ground surface. The initial phase would include assessing the site and development of a Final Reclamation Plan. Disposal destinations and locations for decommissioned structures, non-hazardous waste, and debris would be identified and designated in the Final Reclamation Plan. Appendix B2 contains a Preliminary Closure, Decommissioning, and Reclamation Plan.

Pre-decommissioning activities would be conducted to prepare Project facilities for demolition. During pre-decommissioning, hazardous materials and associated residues would be removed from the site. All operational liquids and chemicals would be removed and disposed of in a manner compliant with regulatory requirements in effect at the time of decommissioning. All disposal and transportation of hazardous waste would be conducted with oversight of a licensed state waste contractor to ensure regulatory compliance. Equipment associated with decommissioning and reclamation would include cranes, excavators, backhoes, flatbed trucks, low-bed trucks, and water trucks.

2.5.5.2 PG&E Components

At Project decommissioning, PG&E may decommission the gen-tie line but would not decommission the Tranquillity Switching Station or its associated upgrades. Those PG&E components would continue to operate and be maintained after the decommissioning of the Project.

2.6 Permits and Approvals

The permits or other approvals identified in **Table 2-4**, *Permits and Approvals*, may be required to construct, operate, maintain, and decommission some or all components of the Project.

TABLE 2-4
PERMITS AND APPROVALS

Project Component	Permits and Approvals
Solar and Energy Storage Facilities	• County approval of Unclassified Conditional Use Permit No. 3630 for the solar portion of the Project and potentially an additional Conditional Use Permit for the battery energy storage system portion of the Project. • County approval to authorize abandonment or vacation of segments of unimproved County roads, including portions of S. Ohio Avenue, W. Lincoln Avenue, and W. South Avenue. • County approvals also may be required if work is to be performed within a County right-of-way (i.e., an encroachment permit from the Road Maintenance and Operations Division of the Department of Public Works and Planning), along a County right-of-way (i.e., a franchise agreement) if necessary, or for the erection, demolition, or conversion of any building or structure (i.e., building and grading permits). • San Joaquin Valley Unified Air Pollution Control District approval of Indirect Source Review, stationary and/or mobile sources may be required. San Joaquin Valley Air Pollution Control District also may require submittal of a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities involving disturbance of at least 1 acre. Permits from the air district may be required for emergency diesel generators for the backup energy for the battery energy storage system. • California Department of Fish and Wildlife authorization may be required pursuant to the agency's lake and streambed alteration regulatory authority (Fish and Game Code Section 1600 et seq.) and/or if the proposed activities could result in *take* as defined in the California Endangered Species Act (Fish and Game Code Section 2050 et seq.). • U.S. 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. • If Project features, including electrical facilities, would cross Westland Water District's (WWD) distribution system laterals 6L, 7L, or 8L, then compliance with WWD's requirements for crossing a District lateral easement would be required. Since the WWD pipeline facilities are also within U.S. Bureau of Reclamation (Reclamation) easements, then approval from Reclamation would also be required in the form of a Letter of No Objection.
PG&E Components	• California Public Utilities Commission issuance of an Advice Letter pursuant to General Order 131-E authorizing PG&E to proceed with construction of the PG&E-owned portion of the generation-tie line and facilities within Tranquillity Switching Station.

2.7 References

Carbajal, Candace. 2024. Email re: Heartland 1 Q1379. December 23, 2024.

County of Fresno. 2018. *Onsite Wastewater Treatment System Guidance Manual*. January 2018.

County of Fresno. 2019. Local Area Management Program.

Heartland Solar 1, LLC. 2024. Review comments on Second Administrative Draft EIR Chapter 2, Project Description. December 6, 2024.

CHAPTER 3
Environmental Analysis

3.1 Introduction to Environmental Analysis

3.1.1 Overview

This chapter describes and analyzes the direct, indirect, and cumulative environmental impacts of the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project) as they relate to each of the resource considerations identified in the environmental checklist provided in CEQA Guidelines Appendix G. As an introductory matter, CEQA fundamentals are described in Section 3.1.2, the approach to the cumulative effects analysis is described in Section 3.1.3, and other CEQA considerations are described in Section 3.1.4, *Growth Inducement*, and Section 3.1.5, *Irreversible Impacts*. Potential environmental impacts of alternatives to the Project are analyzed and compared to Project impacts in Chapter 4, *Alternatives*.

3.1.2 CEQA Fundamentals

3.1.2.1 Environmental Baseline

The analysis of each issue area begins with a description of the actual physical environmental conditions in the area where the Project and alternatives would be implemented. These conditions are referred to as the "baseline" relative to which Project-caused changes are analyzed to determine whether the change is significant for purposes of CEQA (CEQA Guidelines Sections 15125 and 15126.2). For this Project, baseline conditions are those that existed in October 2022 when the Notice of Preparation (NOP) was published, unless as otherwise noted. The NOP is included as an exhibit to the scoping report provided in **Appendix A**. The effects of the Project and alternatives are defined as changes to the environmental setting that are attributable to Project components or activities. Consistent with CEQA, an EIR need not analyze the effects of the existing environment on a project (including its users or occupants) unless the project exacerbates those conditions.

3.1.2.2 Impact Significance Criteria

CEQA lead agencies rely on impact significance criteria as benchmarks to determine whether changes to the existing environment caused by a project or an alternative would cause a significant adverse effect. A significant effect on the environment is "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (CEQA Guidelines Section 15382).

To guide Fresno County in determining whether the Project or an alternative may cause a significant impact on the environment, the preparers of this EIR (identified in Chapter 5, *Report Preparation*) have considered the series of questions provided in the CEQA Guidelines Appendix G Environmental Checklist.

3.1.2.3 Impact Significance Conclusions

This EIR evaluates whether the Project and alternatives would cause a change in the environment. The conclusions reached are based on information in the record, including scientific and factual data as well as professional knowledge and judgment, and the thresholds identified in the resource analyses that follow. Consistent with CEQA and the CEQA Guidelines, significance conclusions are characterized as one of the following:

1. **No Impact:** The Project or an alternative would not cause any change in the environment relative to the applicable significance criterion; under these circumstances, no mitigation measures would be required or may be imposed, and the Project or alternative could not cause or contribute to any cumulative effect.

2. **Less-than-Significant Impact:** The Project or an alternative could cause an adverse change in the environment, but not one that would be substantial, relative to the applicable significance threshold. Under these circumstances, no mitigation measures would be required or may be imposed. The analysis considers whether the Project or alternative could cause or contribute to a potential cumulative effect.

3. **Less than Significant with Mitigation Incorporated:** The Project or an alternative could cause an adverse change in the environment that would be substantial relative to the applicable significance threshold, but that the implementation of one or more feasible mitigation measures would reduce the significance of the impact below the established threshold. The analysis considers whether the Project or alternative could cause or contribute to a potential cumulative effect.

4. **Significant and Unavoidable:** The Project or an alternative could cause a substantial adverse change in the environment relative to the applicable significance threshold; however, either no feasible mitigation measures are available or, even with implementation of feasible mitigation measures, the significance of the impact would remain above the established threshold. The analysis considers whether the Project or alternative could cause or contribute to a potential cumulative effect.

5. **Cumulatively Considerable:** The Project-specific or alternative-specific contribution to a significant cumulative effect would be considerable when viewed in connection with the incremental impacts of past projects, the impacts of other current projects, and the impacts of reasonably foreseeable probable future projects (as defined in CEQA Guidelines Section 15130).

To avoid or reduce potential significant impacts where feasible, alternatives have been considered or mitigation measures have been recommended to address them.

3.1.2.4 Mitigation Measures

CEQA Guidelines Section 15370 defines mitigation to include:

a) Avoiding the impact altogether by not taking a certain action or parts of an action.

b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.

d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

e) Compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements.

The County has developed mitigation measures to avoid or reduce potential significant adverse environmental effects of the Project and alternatives. The full text of the mitigation measures is provided in the individual resource sections throughout this chapter. The EIR evaluates the effectiveness of recommended mitigation measures by analyzing the impact that would remain after the implementation of the measure. In some cases, the implementation of more than one mitigation measure may be needed to reduce the significance of an impact below an established threshold.

3.1.2.5 PG&E Interconnection Infrastructure

To interconnect and support the Project, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. These improvements would include approximately 1,000 linear feet of the offsite gen-tie line, fiber lines and other communications equipment, and upgrades within the existing Tranquillity Switching Station (including the installation of a new 230 kV breaker-and-a-half configuration). Expansion of the fenced footprint of the existing Tranquillity Switching Station is not required. The impacts of PG&E's proposed infrastructure improvements to support the Project are analyzed in this EIR.

3.1.3 Cumulative Effects Approach

As defined in CEQA Guidelines Section 15355, the term *cumulative impacts* refers to two or more individual effects, which, when considered together, are considerable or that compound or increase other environmental impacts. The cumulative impact from multiple projects is the change in the physical environment that results from the incremental impact of the proposed project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Sections 15355[b] and 15130[a][1]).

The analysis in this chapter evaluates potential cumulative impacts on a resource-by-resource basis by considering the incremental impacts of the Project together with the ongoing or anticipated effects of past, present, and reasonably foreseeable probable future projects that would cause environmental impacts that could combine with those caused by the Project. Factors considered in determining whether a project is included in the cumulative scenario include whether it would cause impacts of the same nature as the Project in the same area at the same time.

3.1.3.1 Cumulative Scenario

The term *cumulative scenario* is used in this EIR to refer to the projections and projects that are considered in the cumulative impact analysis. This EIR relies on a blend of two approaches to identify those projects: the "list-of-projects" approach and the "summary of projections" approach (CEQA Guidelines Section 15130[b]). A list of projects that would cause impacts that could combine with those of the Project is provided in **Table 3.1-1**, *Cumulative Projects List*. **Figure 3.1-1** depicts these projects in relation to the Project.

The "summary of projections" approach evaluates the impacts of a proposed project in the context of projections made in one or more local, regional, or statewide planning documents or environmental analysis that has been adopted or certified, such as the Fresno County General Plan[1] and the San Joaquin Valley Air Pollution Control District's Planning Air Quality Plans.[2] Such plans are prepared by local agencies to meet the requirements of state law and may contain the preparing agencies' comprehensive, long-term visions for physical development or resources conservation within the region.

3.1.3.2 Cumulative Impacts Analysis

Incremental impacts resulting from initial site preparation and construction, O&M, and decommissioning and site restoration could combine with the incremental impacts of other projects to cause or contribute to cumulative effects. Direct and indirect effects of the Project are analyzed on a resource-by-resource basis throughout Chapter 3; a comparative analysis of the cumulative impacts of the alternatives is provided in Chapter 4, *Alternatives*. Where the Project or an alternative would cause no impact on a given resource, it could not cause or contribute to any cumulative impact to such a resource. See, e.g., Section 3.17, *Recreation*.

For the remaining resource areas, this Draft EIR analyzes potential incremental impacts of the Project and alternatives combined with the incremental impacts of past, present, and reasonably foreseeable future projects, and determines whether the incremental impacts of the Project would be significant. If so, the analysis proceeds to consider whether the incremental contribution of the Project would be cumulatively considerable and therefore significant for purposes of CEQA. As noted above, the geographic scope of the cumulative effects analysis for each resource area is tailored to the natural boundaries of the affected resource. Unless otherwise noted in the analysis, potential cumulative effects could occur during any phase of the Project, from the moment on-site activities begin to the conclusion of post-Project site restoration activities. Existing conditions within the cumulative impacts area reflect a combination of natural conditions and the ongoing effects of past actions in the affected area.

[1] The Fresno County General Plan (Fresno County 2024) is available for public review as part of the reference set for this Draft EIR and on the County's website: https://www.fresnocountyca.gov/Departments/Public-Works-and-Planning/divisions-of-public-works-and-planning/development-services-division/planning-and-land-use/general-plan-maps.

[2] The San Joaquin Valley Air Pollution Control District's air quality plans (SJVAPCD 2025) relied upon in this analysis are available for public review as part of the reference set for this Draft EIR and on the District's website: https://www.valleyair.org/rules-and-planning/air-quality-plans/.

TABLE 3.1-1
CUMULATIVE PROJECTS LIST

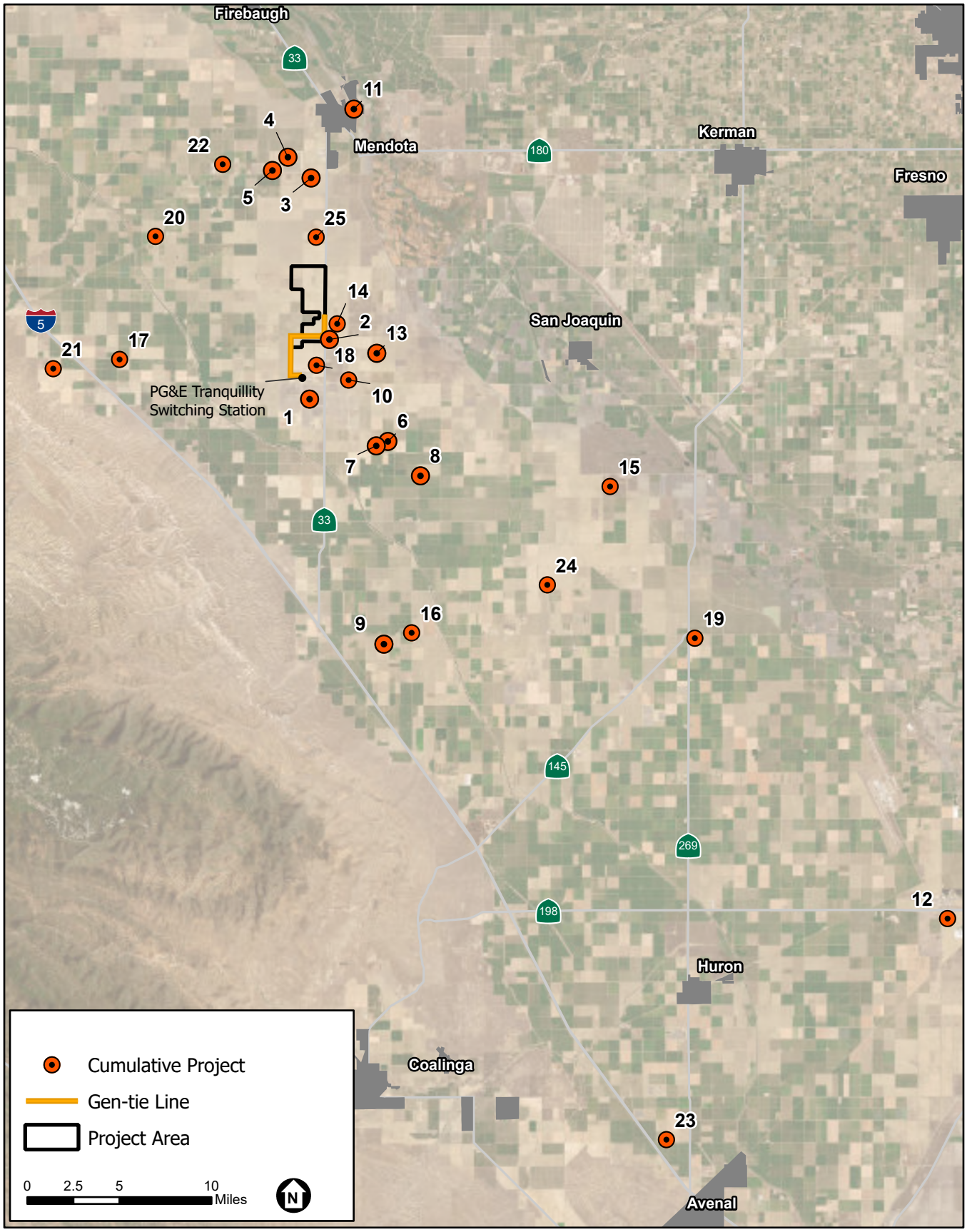
Map Key	Project Name/Applicant	Location	Approximate Distance from Project Site	Description	Status
Past Projects					
1	RE Tranquillity #1 - #8	Seven miles southwest of the community of Tranquillity, south of Manning Avenue between San Benito Avenue and San Bernardino Avenue	2 miles south	3,732-acre, 400 MW PV solar facility	Project approved in 2014 and is in operation.
2	RE Adams East, LLC	East side of State Route (SR) 33 between South Avenue and West Manning Avenue	1 mile east	322.4-acre, 19 MW PV solar facility	Project began commercial operation in 2014.
3	Little Bear Solar Project	West side of SR 33 between West California Avenue and West Jensen Avenue	7 miles north	1,288-acre, 180 MW PV solar facility	Project approved in February 2019 and is under construction.
4	North Star Solar Project	South side of Whitesbridge between San Bernardino and Ohio Avenue	8 miles north	626-acre, 60 MW PV solar facility and gen-tie line to PG&E's Mendota Substation	Project approved in 2012/2013 and is in operation.
5	Citizen Solar B, E & F	East side of North San Diego Avenue between Whitesbridge Avenue and West California Avenue	7 miles northwest	Two independent 40-acre solar facilities and a 240-acre independent solar facility; previously authorized by CUP 3327 (320-acre solar facility)	Project approved in 2016 and is in operation.
6	Giffen Solar Park, LLC	North of West Mountain View Avenue between South Oil City Avenue and South Stanislaus Avenue	6 miles southeast	316-acre, 28 MW PV solar facility, expansion of existing 70 kV substation, and installation of 70 kV double-circuit power line under CPUC jurisdiction	Project began commercial operation in 2017.
7	Aspiration Solar G, LLC	East of South Oil City Avenue between West Nebraska Avenue and West Mountain Avenue	5 miles southeast	120-acre, 9 MW PV solar facility with related improvements	Project began commercial operation in 2017.
8	Giffen Solar Station (PG&E)	South of West Kamm Avenue between South San Mateo Avenue and South Tuolumne Avenue	8 miles southeast	85-acre, 10 MW PV solar facility	Project began commercial operation in 2012.
9	Cantua Solar Station (PG&E)	South of West Mount Whitney Avenue between South Stanislaus Avenue and South Oil City Avenue	13.5 miles southeast	160-acre, 20 MW PV solar facility	Project began commercial operation in 2012.
10	Crescent Switching Station (PG&E) and San Joaquin Solar Project Interconnection	South of West Kamm Avenue between South Yuba Avenue and South Butte Avenue	14 miles southeast	70 kV gen-tie line and switching station	Project is in operation.
11	CalRenew-1	East of West Belmont Avenue. East of the William Robert Johnston Municipal Airport	11 miles northeast	50-acre, 5 MW solar project	Project is in operation.
12	Westlands Solar Park (WSP) and WSP Gen-Tie Corridors Plan	Southern Fresno County; northern Kings County south of SR 198, west of SR 41 and the Kings River, east of Fresno County line gen-tie corridor from Gates Substation west along Jayne Avenue	35 miles southeast	Master plan for PV solar on 21,000 acres mostly in west-central Kings County with gen-tie lines in southern Fresno County	Final Program EIR published 2017

Map Key	Project Name/Applicant	Location	Approximate Distance from Project Site	Description	Status
Present or Reasonably Foreseeable Future Projects					
13	Scarlet Solar Energy Project	South of West South Avenue, north of West Dinuba Avenue, east of SR 33, and west of South San Mateo Avenue	1.5 miles southeast	4,069-acre PV solar facility to generate up to 400 MW_{AC} and related improvements, including eight substations, up to 7.2 miles of 230 kV gen-tie line, a 400 MW energy storage system (consisting of battery or flywheel enclosures and electrical cabling), and other necessary infrastructure	Final EIR published in August 2021; project is under construction
14	Sonrisa Solar Project	South of West Adams Avenue, north of West Manning Avenue, and east of SR 33	1 mile northeast	2,300-acre, 200 MW PV solar facility with 200 MW energy storage system	CEQA review in progress
15	Rosemary Solar Project and Crescent Switching Station (PG&E) Interconnection	South of West Kamm Avenue between South Yuba Avenue and South Butte Avenue	14 miles southeast	1,172-acre, 140 MW solar facility and 2-mile transmission (gen-tie) line interconnection	CEQA review in progress
16	Mk Operating	28940 West Mount Whitney Avenue	14 miles southeast	Exploratory oil and gas wells	Unknown
17	VZ Wireless Tower	Southeast corner of South Hudson Avenue and West Dinuba Avenue	8.5 miles southwest	155-foot-tall lattice tower	Construction permits issued April 30, 2020
18	Luna Valley Solar Project	South of West South Avenue, north of Dinuba Avenue, and west of SR 33	1 mile south	1,300-acre PV solar generating up to 200 megawatts alternating current; supporting facilities include an on-site substation and energy storage system	Final EIR published in August 2021; approved June 2022. Construction in progress; planned for operation mid-late 2025.
19	Akhavi Ranch, Akhavi, LLC	South of West Mount Whitney Avenue, between South Siskiyou Avenue and SR 269	20 miles southeast	Rezoning of a 9-acre portion of a 309-acre parcel from AE-20 to C-6 and an existing 6-acre parcel from AC (Agricultural Commercial) to C-6 (General Commercial)	IS/MND in process
20	Stamoules Pistachio Processing Facility Project	West of Newcomb Avenue between Jensen and American avenues	8 miles northwest	Pistachio hulling, processing, and packing facility on a 98-acre portion of a 316.2-acre parcel	Final EIR published January 10, 2024
21	Manning 500/230 kV Substation Project/LSPGC; PG&E	South of Manning Avenue (western Fresno County), east of the Bureau of Land Management's Tumey Hills recreation area	1.25 miles south of the solar and energy storage facility site	New Manning Substation and new 230-kilovolt (kV) transmission line connecting the proposed Manning Substation to PG&E's existing Tranquillity Switching Station; connection of existing (Los Banos–Midway and Los Banos–Gates) 500 kV transmission lines to new Manning Substation; extension of an existing 12 kV distribution line to the new Manning Substation.	Planning and permitting stage; IS/MND published in March 2025
22	Stamoules Airport	North side of West California Avenue between Washoe Avenue and South Lyon Avenue	9 miles northwest	Conditional Use Permit seeks approval of a 4,847-foot-long concrete runway on an existing 434.93+/- acre parcel	CUP application 3694 filed on February 2, 2021

Map Key	Project Name/Applicant	Location	Approximate Distance from Project Site	Description	Status
23	Key Energy Storage	South of West Jayne Avenue, between I-5 and South Lassen Avenue	35 miles southeast	318-acre energy storage facility with the capacity to store up to 3 gigawatts; associated facilities include a small substation and a 0.3-mile-long, 500 kV overhead generation-tie line.	CUP application 3734; Final EIR certified October 2024
24	Darden Clean Energy Project	South of Cantua Creek in western Fresno County; between South Sonoma Avenue to the west and South Butte Avenue to the east	12 miles southeast	Solar and battery storage, grid step-up station on 9,500 acres; 15-mile 500 kV gen-tie line and PG&E-owned 500 kV switchyard along the Los Banos Midway #2 500 kV TL	Draft EIR released for public review in February 2025
25	Valley Clean Infrastructure Plan/Golden State Clean Energy	Westlands Water District boundary within Fresno County just west of I-5 (to the west) and extending from south from Firebaugh to the Avenal Cutoff Road	Master plan overlaps Project area	Master plan for solar generation, energy storage, and electrical transmission on 130,000 acres in western Fresno County and the central San Joaquin Valley	Draft EIR released for public review in February 2024

NOTES: AC = alternating current; CUP = conditional use permit; CPUC = California Public Utilities Commission; EIR = Environmental Impact Report; I-5 = Interstate 5; IS/MND = Initial Study / Mitigated Negative Declaration; kV = kilovolt; MW = megawatt; PG&E = Pacific Gas and Electric Company; PV = photovoltaic

SOURCES: Fresno County Department of Public Works and Planning, 2021a, 2021b, 2021c, 2021d, 2021e; CEQAnet, 2025



SOURCE: ESA 2025

Heartland Solar Project

Figure 3.1-1

Cumulative Projects

3.1.4 Growth Inducement

Section 15126.2(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, it is expected that an average of 375 workers would be onsite to construct the solar and energy storage facilities, with a maximum of 625 workers at the peak of construction. The existing construction labor pool in Fresno County is sufficient for meeting Project needs.[3] Following construction, the Project would require approximately 3 full-time staff members with an additional up to 25 workers approximately every one to five years for certain activities. Decommissioning and site restoration activities are expected to require a smaller workforce than construction; decommissioning and site restoration-related activities are expected to take approximately a year to complete according to the Project's Reclamation Plan. Because construction and decommissioning are temporary, and because the necessary number of workers could be supplied by the existing available labor pool, the Project is unlikely to cause substantial numbers of people to relocate to Fresno County. Therefore, this Project would not result in a large increase in employment levels that would significantly induce growth.

It is expected that construction workers would commute to the Project site instead of relocating to Fresno County; however, even if all workers were to migrate into Fresno County, the existing available housing supply could accommodate them without requiring new construction.[4] Therefore, the Project is not expected to induce population growth, the housing and provision of services for which could cause significant adverse environmental impacts.

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. 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.

[3] According to the California Employment Development Department's Labor Market Information Division, "The unemployment rate in Fresno County was 5.9 percent in August 2022, up from a revised 5.7 percent in July 2022, and below the year-ago estimate of 8.8 percent. This compares with an unadjusted unemployment rate of 4.1 percent for California and 3.8 percent for the nation during the same period." (California Employment Development Department 2022).

[4] Fresno County's vacancy rate for residential rentals is lower than the national average: 2.3 percent compared to 5.6 percent nationwide (iProperty Management 2022). Based on an Apartments.com search conducted October 10, 2022, 1,304 available rental units were available in Fresno County (Apartments.com 2022).

3.1.5 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 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. 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.

3.1.6 References

Apartments.com. 2022. Rentals Available in Fresno County.

California Employment Development Department. 2022. Fresno Metropolitan Statistical Area (MSA). September 16, 2022.

CEQAnet. 2025. Online searchable database of the State Clearinghouse of the Governor's Office of Land Use and Climate Innovation.

iProperty Management. 2022. Rental Vacancy Rate. September 18, 2022.

Fresno County. 2024. General Plan. February 2024.

Fresno County Department of Public Works and Planning. 2021a. Kamm Avenue Pistachio Processing Plant Draft EIR. February 2021.

Fresno County Department of Public Works and Planning. 2021b. Scarlet Solar Energy Project Draft EIR. May 2021.

Fresno County Department of Public Works and Planning. 2021c. Luna Valley Solar Project Draft EIR. May 2021.

Fresno County Department of Public Works and Planning. 2021d. Scarlet Solar Energy Project Final EIR. August 2021.

Fresno County Department of Public Works and Planning. 2021e. Luna Valley Solar Project Final EIR. August 2021.

San Joaquin Valley Air Pollution Control District. 2025. Air Quality Attainment Plans.

3.2 Aesthetics

This section identifies and evaluates issues related to aesthetics and visual resources, including scenic vistas and other scenic resources, the existing visual character or quality of public views of the Project site and its surroundings, light, and glare. The section describes the environmental and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). The County did not receive comments regarding aesthetics during the public scoping period (Appendix A, *Scoping Report*). This analysis is based in part on the Project-specific visual simulations.

3.2.1 Visual Concepts and Terminology

Individuals' values, familiarity with a landscape, concern for a landscape, or interpretation of scenic quality can lead to varying individual determinations of scenic quality and varying individual responses to changes made to a landscape. Due to unique individual attachments to values for a particular landscape, visual changes will inherently affect viewers differently. However, general assumptions can be made about viewer sensitivity to scenic quality and visual changes. In this analysis, visual or aesthetic resources are defined as 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 readers' understanding of the content in this section.

Visual Quality is defined as 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 Environmental Impact Report (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 or cultural scenic amenities.

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

- Landscape visibility (i.e., the ability to see the landscape).
- Viewing distance (i.e., the proximity of viewers to a project).
- Viewing angle – whether a project would be viewed from above (superior), below (inferior) or from a level line of sight (normal).
- Extent of visibility – whether the line of sight is open and panoramic to a project area 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 recreationalist and motorist) and amounts 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 reflected according to high, moderate, and low visual sensitivity ranges.

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 a project's features with the major features in the existing landscape.

Form is the mass or shape of an object or objects which appear unified.

A ***Key Observation Point (KOP)*** (or a key viewpoint) is a point on a travel route or at a potential use area, where the view of a proposed activity would be most revealing. For the purposes of the visual resources analysis, specific key viewpoints were selected to form a pre-development basis for comparison with visual simulations of the (post-development) Project site.

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 an area a distinctive quality that distinguishes it from its immediate surroundings.

Line is the path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

Scenic vista is an area that is designated by a federal, state, or local agency, signed, and accessible to the public for the purposes of viewing and sightseeing. Generally, a vista is considered to be a location from which broad, sweeping views are observed at a distance.

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

Sensitive receptors or sensitive viewpoints include individuals or groups of individuals that have views of a site afforded by a scenic vista, scenic highway, residence, or public recreation area.

Texture is the visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

The ***viewshed*** for a project is the surrounding geographic area from which the project is likely to be seen, based on topography, atmospheric conditions, land use patterns, and roadway orientations.

3.2.2 Setting

3.2.2.1 Study Area

The study area for this analysis of potential impacts to aesthetics includes the Project site and the surrounding landscape within 5 miles of the Project boundary because, beyond 5 miles, low-profile structures are sufficiently far into the distance that only form or outline would be discernible.

3.2.2.2 Environmental Setting

Environmental conditions discussed include the regional and local visual environment, sources of light and glare within the Project vicinity; sensitive visual receptors; visual quality of the study area; and key viewpoints selected as a basis for existing visual conditions.

Regional Character

The Project site is located in western Fresno County, approximately 7 to 8 miles northeast of the base of the Diablo coastal mountain range. The region is defined as the San Joaquin Valley, which 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. The region is dominated by agricultural uses. The topography is relatively flat, but elevations gradually rise towards the east, south, and west. The flat topographic characteristics of the Project site and surrounding region allow for open, expansive views of 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.

Scenic Vistas

There are no designated scenic vistas in the Project vicinity. Additionally, due to the flat nature of the Project vicinity and region, there are no unique, elevated areas from which an individual could gain an exemplary high-quality view within the vicinity of the Project site.

Scenic Roadways

The major north-south route in the region is Interstate 5 (I-5), a four-lane divided highway located approximately 5.5 miles west of the Project site. I-5 is recognized as a scenic highway by Fresno County (Fresno County 2024). There are no state-designated or eligible highways near the Project

site. State Route (SR) 180 (from the eastern edge of Fresno to Cedar Grove in Kings Canyon National Park) is Fresno County's only officially designated state scenic highway. This portion of SR 180 is approximately 50 miles from the Project site. The closest eligible state scenic highway segment is a portion of SR 33 (east of I-5) located more than 22 miles south of the southernmost Project component (Caltrans 2023).

Local Character

The Project site is surrounded by a mix of cultivated and fallow agricultural lands, solar energy generation facilities, and scattered rural residences. Generally, the landscape is comprised of a mix of cultivated and fallow fields. Both non-irrigated fields and cultivated agricultural lands surround the Project site. Fields are delineated by both paved roads and unimproved, narrow roads that create a grid pattern. The active use of agricultural equipment generates airborne dust, which creates a generally hazy environment where long-distance views are limited. The existing Adams East Solar Project is located immediately east of the Project site, across SR 33. Pacific Gas and Electric Company's (PG&E) existing Tranquillity Switching Station and the existing Tranquillity Solar Project are located approximately 1 mile to the south. These existing energy projects introduce linear, dark, industrial appearing elements to the landscape.

Local visual character in the vicinity is dominated by the presence of agricultural fields and operations as well as surrounding energy projects. Due to the dark color and low-profile nature of the existing photovoltaic panels, the solar panels generally do not create a high visual contrast with other parts of the landscape and character. Existing power lines, PG&E's Tranquillity Switching Station, and the substations associated with the existing solar generation facilities extend vertical, industrial appearing structures into the landscape in contrast with the surrounding rural agricultural landscape. The mix of rural agricultural views along with views of solar facilities in the Project vicinity can be described as representative of views in the region; with a generally rural landscape dominated by agricultural views interspersed with more industrial and developed land uses, existing solar facilities and power lines, as well as machinery, buildings and structures associated with residential and agricultural operations. Overall, the visual character of the Project vicinity is a combination of both agricultural and industrial elements such as existing power lines.

On-Site Views

The Project site has been dry farmed for rangeland grasses and/or grain or lain fallow. The site is generally flat with elevations ranging from 184-200 feet above mean sea level (amsl) with the highest elevation in the southwest corner and the lowest elevation in the northeast corner. Various dirt roads and agricultural structures are present on the site. The Diablo Range is visible in the distance in southwestern views. Power lines are visible along the roads bordering the site. Existing on-site views may be characterized as representative.

Lighting Environment

There is no existing lighting within the Project site. Regionally, there are limited sources of outdoor lighting such as streetlights from the community of Tranquillity and the cities of San Joaquin and Mendota, structural lighting at scattered residential locations and at the Westland Water District offices (on W. Adams Avenue), and security lighting from adjacent solar energy generation

facilities and their substations. Other sources of light include automobile traffic on surrounding roadways such as SR 33, W. Manning Avenue, S. Monterey Avenue, and W. Adams Avenue.

Glare is produced when reflective surfaces are exposed to direct or indirect lighting, such as sunlight. Glare is most noticeable during the day, when surface water, metallic or brightly colored surfaces of equipment, vehicles or windows can reflect sunlight. Existing sources of glare on the Project site periodically may include vehicles or equipment used for agriculture operations. Nearby energy infrastructure also may present a source of glare at certain times of day during certain seasons from certain vantage points.

Viewer Types and Exposures

Potential public viewer groups evaluated for this analysis include motorists along major or scenic roadways, visitors to parks and recreational areas, and visitors to scenic vistas. For each viewer group analyzed, viewer exposure conditions were evaluated based on information of traffic flows along the local roadways identified in Section 3.18, *Transportation*.

Variables considered include the angle of view, the extent to which views would be 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 within a foreground (within 0.5 mile), middle ground (0.5 mile to 2 miles), or background (beyond 2 miles) zone.

Motorists on Major or Scenic Travel Routes

There are no state-designated or eligible scenic highways on or near the Project site. SR 180 (from the eastern edge of Fresno to Cedar Grove in Kings Canyon National Park) is Fresno County's only officially designated state scenic highway. This portion of SR 180 is approximately 50 miles from the Project site.

The California Scenic Highway Mapping System identifies four highway segments that are potentially eligible for future designation as scenic highways including a portion of SR 65 near Huntington Lake/Clovis, a portion of SR 65 near Minkler/Kings Canyon and portions of SR 198 and SR 33 near Coalinga/Oilfields, and I-5 (U.S. Department of Transportation 2015; Caltrans 2023). All of these segments are outside of the viewshed of the Project site.

A segment of I-5 is a County-designated scenic route (Fresno County 2024). This segment is approximately 7.5 miles south and west of the Project site. The Project site was determined not to be visible or identifiable from I-5 due to intervening distance, developments, and vegetation. Therefore, the travel routes for consideration in this analysis include W. Adams Avenue, Manning Avenue, and SR 33 because they are the closest major roadways to the Project site.

These roadways provide views of the Diablo Range to the west as well as views of agricultural fields and can be considered to have representative views. As these roads are not considered scenic travel routes, and surrounding land uses include the agricultural operations and solar generating facilities, it is assumed that travelers along these routes generally use the roadways for local agricultural or commuting purposes.

3.2.2.3 Regulatory Setting

Federal

No federal laws, regulations, plans, or standards apply to this analysis of aesthetic impacts.

State

California State Scenic Highway Program

The California Department of Transportation (Caltrans) manages the State Scenic Highway Program and provides guidance to local governments, community organizations, and citizens pursuing an official designation of a State Scenic Highway. The Scenic Highway Program was introduced by the State Legislature in 1963 and established through Senate Bill 1467, which added Sections 260 through 263 to the California Streets and Highways Code. These statutes establish the State's responsibility for the protection and enhancement of California's natural scenic beauty by identifying those portions of the State highway system which, together with adjacent scenic corridors, require special conservation treatment. Scenic corridors consist of land visible from, adjacent to, and outside the highway right-of-way, and is comprised primarily of scenic and natural features. Topography, vegetation, viewing distance, and/or jurisdictional boundaries determine the corridor boundaries. The legislation further declares the intent of the State to assign responsibility for the regulation of land use and development along scenic highways to the appropriate State and local governmental agencies. A county highways component was later added to the Scenic Highway Program in Section 154 of the California Streets and Highways Code (Caltrans 2023). The Project site is not located in a state scenic highway corridor. The closest eligible state scenic highway segment is a portion of SR 33 (east of I-5) located more than 22 miles south of the southern-most Project component.

Local

Fresno County General Plan

The Open Space and Conservation Element of the Fresno County General Plan provides policies intended to protect the County's scenic resources and ensure that development enhances those resources through various measures including identification, development review, acquisition, encouragement of easements, coordination with other agencies and groups, among other methods (Fresno County 2024). This element does not identify the Project site as a scenic resource.

The Fresno County General Plan also includes policies intended to protect scenic resources along roadways of the County by identifying, developing, and maintaining scenic amenities along County roads and highways and ensuring that development enhances those resources. According to Policy OS-L.1, Fresno County has designated a system of scenic roadways that includes landscaped drives, scenic drives, and scenic highways. According to this element, the only

designated scenic roadway in the vicinity of the Project site is I-5, which is designated as a scenic highway. Figure 3.2-1 shows I-5 in relation to the Project site. There are no other scenic resources or vistas identified in the General Plan.

The policies in the Fresno County General Plan for scenic resources relevant to the Project are provided below.

Policy K. Scenic Resources

Goal OS-K: To conserve, protect, and maintain the scenic quality of Fresno County and discourage development that degrades areas of scenic quality.

***Policy OS-K.1 Scenic Resource Preservation*:** 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 Incorporating Scenic Features*:** 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.

Policy L. Scenic Roadways

Goal OS-L: To conserve, protect, and maintain the scenic quality of land and landscape adjacent to scenic roads in Fresno County.

***Policy OS-L.1 Scenic Roadway System*:** The County designates a system of scenic roadways that includes landscaped drives, scenic drives, and scenic highways.

***Policy OS-L.3 Scenic Roadway Management*:** The County shall manage the use of land adjacent to scenic drives and scenic highways based on the following principles: …
b. Proposed high voltage overhead transmission lines, transmission line towers, and cell towers shall be routed and placed to minimize detrimental effects on scenic amenities visible from the right-of-way.

3.2.3 Significance Criteria

The Project would result in significant impacts on aesthetics 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 of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality;

d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.

3.2.4 Direct and Indirect Effects

3.2.4.1 Methodology

This visual impact assessment identifies and assesses any potential short- or 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 on aesthetics, this assessment included the following steps:

1. 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, and simulations; Google Earth Pro aerial photographs and street-level photography; Fresno County Geographic Information System topographic and land use data; and U.S. Geological Survey topographic data.

2. Assessing the Project's impacts to identified views by evaluating potential Project-caused change in the affected area's baseline visual quality and character.

A significant visual impact may occur when: (1) a project significantly changes the existing physical visible features of the landscape that are characteristic of the region or locale; (2) a project introduces new features to the physical landscape that are uncharacteristic of the region or locale and become visually dominant in the viewshed; or (3) a project blocks or totally obscures valued aesthetic features of the landscape. The degree of visual impact depends on how noticeable the visual change is in conjunction with the visual sensitivity of the site. The noticeability of a visual impact is a function of the project features, context, and viewing conditions (angle of view, distance, and primary viewing directions). The key factors in determining the degree of visual change are visual contrast, project dominance, and view blockage. Overall adverse visual impact reflects the composite visual changes to both the directly affected landscape and from sensitive viewing locations. Visual simulations were prepared to evaluate visual effects for the Project.

Determining the Degree of Visual Change

Visual Contrast

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:

1. **None** – The element contrast is not visible or perceived.
2. **Weak** – The element contrast can be seen but does not attract attention.
3. **Moderate** –The element contrast begins to attract attention and introduces a visual change to the characteristic landscape.
4. **Strong** – The element contrast demands the viewer's attention and cannot be overlooked.

Project Dominance

Visual dominance is a measure of a project feature's apparent size or visual contrast relative to other visible landscape features in the viewshed, or seen area.

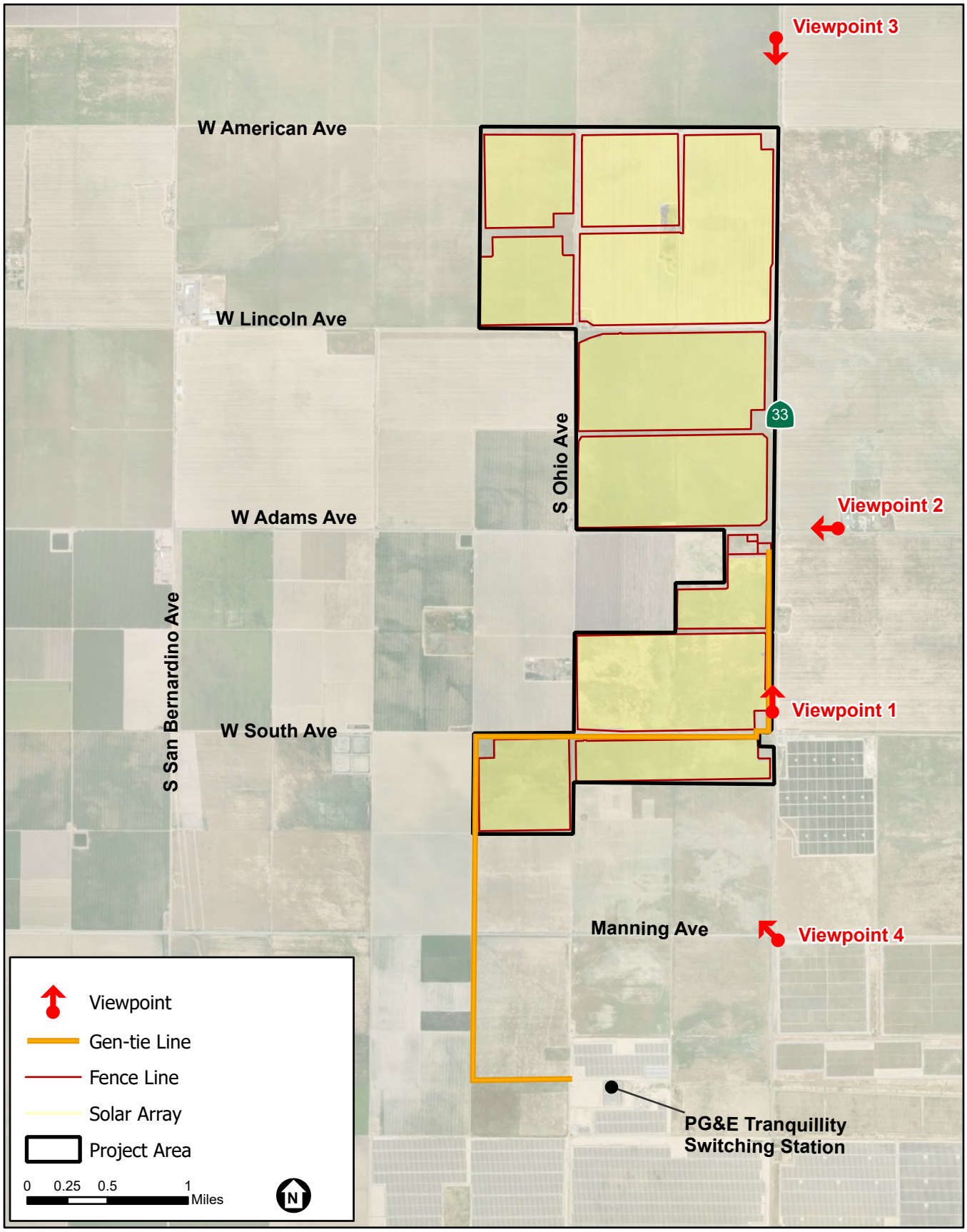
View Blockage or Impairment

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.

Selecting KOPs for Visual Simulation

As explained in Section 3.2.1, *Visual Concepts and Terminology*, key observation points (KOPs) are locations where the view of a proposed activity would be most revealing. For this analysis, four specific KOPs were selected to form a pre-development basis for comparison with visual simulations of the (post-development) Project site. The visual simulations prepared from these locations inform the evaluation of the change that could be expected to result if the Project is approved. Factors considered in selecting the four KOPs include whether the locations are publicly accessible, commonly used (such as well-traveled roads, trails, or gateways to established residential areas), and visually sensitive (scenic vistas, highways, tourist routes, and recreation areas are generally considered to be more visually sensitive).

As explained in Section 3.2.2.2, *Environmental Setting*, the Project site is located in an area with few residences and no outstanding scenic features and the area has an overall moderate-to-low visual quality. The consideration of viewership consists mainly of motorists traveling along the local public roadways. Viewpoint 1 is a representative view of the Project site that northbound motorists may experience along SR 33. Visual sensitivity from this perspective would be low to moderate considering that the views would likely occur at high travel speeds with a brief duration of view. Viewpoint 2 is a representative westbound view that motorists or local commuters may experience along W. Adams Avenue. Along this local roadway motorists would likely travel at a slower pace (compared to highway speeds). Accordingly, the duration of view would be relatively longer. Viewpoint 3 is a representative view of the Project site visible to southbound motorists traveling along SR 33. Similar to Viewpoint 1, the view would generally be experienced at high speeds and be of brief duration. Motorist viewers would generally have low to moderate visual sensitivity while traveling through this route. Viewpoint 4, looking northwest from the intersection of SR 33 and W. Manning Avenue, depicts the southern extent of the Project site as visible from this major local intersection. From this perspective, the viewer would likely be stopped at the intersection or turning left. Therefore, the duration of view would be longer and visual sensitivity would be moderately higher from Viewpoint 4. A map of the selected viewpoints is shown in **Figure 3.2-1**.



SOURCE: ESA 2025; ESRI 2025

Heartland Solar Project

Figure 3.2-1

Viewpoint Map

3.2.4.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would have a substantial adverse effect on a scenic vista.

The Project would not have a substantial adverse effect on a scenic vista because there are no designated scenic vistas in the Project vicinity. (*No Impact*)

Rows of solar panel arrays would be installed as part of the Project on the west side of SR 33 between W. American Avenue and W. South Avenue. Additionally, a substation, energy storage system, and electrical infrastructure including power lines would be constructed, operated, maintained, and eventually decommissioned (as described in Chapter 2, *Project Description*). The solar panels and associated solar facility infrastructure would alter views of the site and surroundings; however, these Project components are not proposed within a scenic corridor. The Project site is not within a scenic vista viewshed; therefore, the Project would have no impact in this regard.

Mitigation: None required.

Criterion b) Whether the Project would substantially damage scenic resources, including but not limited to: trees, rock outcroppings, and historic buildings within a state scenic highway.

The Project would not damage scenic resources, including, but not limited to: trees, rock outcroppings, and historic buildings within a state scenic highway because the Project is not located within a state scenic highway corridor. As discussed in Section 3.2.2.2, *Environmental Setting*, the nearest state scenic highway is approximately 50 miles east of the Project site. (*No Impact*)

Mitigation: None required.

Criterion c) Whether the Project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.

Impact 3.2-1: The Heartland Solar Project would not substantially degrade the existing visual character or quality of public views of the Project site and its surroundings. (*Less-than-Significant Impact*)

Public views of the Project site are available from SR 33 and from adjacent local roadways.

Construction and Decommissioning

As noted in Section 2.5.3, *Construction*, construction activities along and to the west of SR 33 between W. American Avenue and W. South Avenue would include grading and site preparation as well as construction of the solar modules, substation, the operations and maintenance area, energy storage system, and power lines would occur over a period of up to 18 months. These activities would involve the presence and movement of delivery trucks, vehicles, and construction

equipment. Construction and deconstruction activities also would require the use of storage, staging, and active work areas.

Construction and decommissioning would introduce a level of activity and visual change to the Project site associated with construction activities and the presence of construction equipment. As described in Section 3.2.2.2, *Environmental Setting*, the existing visual character in the vicinity of the Project site is characterized as agricultural open space with some existing industrial elements (such as power lines). The presence of agricultural equipment and airborne dust from agricultural activities is common. Under existing conditions, there are other industrial renewable energy developments and associated electrical infrastructure present in the near vicinity, within view of the proposed solar installations. Overall, the visual character of the Project site vicinity is a combination of both agricultural and industrial elements. During decommissioning, activity levels on the site would increase relative to the operational condition, construction equipment would be reintroduced, and the visual character of the site would transition from an industrial looking energy facility back to open land consistent with the Preliminary Closure, Decommissioning, and Reclamation Plan provided in Appendix B2.

Overall visual sensitivity of motorists on SR 33 and local roadways at or near the Project site during these activity periods would be considered low to moderate as the duration of views would be brief and fleeting. Viewers would consist mainly of those commuting along SR 33, which is a north-south thoroughfare. Although construction and decommissioning of the Project would result in a temporary degree of change in visual quality at the site, construction activities would not impair or block any sensitive or unique visual resources or landscapes. On this basis, impacts to visual resources related to Project construction and decommissioning would be **less than significant**.

Operation and Maintenance

The Project would operate year-round. Security personnel may be present and operations and maintenance staff would be present during the work week during normal business hours. Rows of solar panel arrays would be visible on the west side of SR 33 between W. American Avenue and W. South Avenue. Additionally, a substation, operations and maintenance area, energy storage system, and electrical infrastructure would be visible, although the view would be dominated by the solar array field.

Figures 3.2-2 through **3.2-5** depict representative existing views (upper image) and simulated views (lower image) of the Project site. As shown on Figure 3.2-2, Viewpoint 1 (looking north along SR 33 north of W. South Avenue), a degree of visual change is evident when comparing the existing and simulated conditions from this vantage point. The open agricultural visual landscape would be modified by structures such as the solar arrays along the western horizon, and other structures would be visible to motorists driving along this roadway. However, as noted in the environmental setting, there are other existing industrial elements in the viewshed. Under existing conditions, for example, there are existing electrical infrastructure elements present including power lines along the roadway, a substation located at the corner of SR 33 and W. Adams Avenue, and another solar facility adjacent to that site. The Project elements would add industrial infrastructure to the views, but would not dominate the landscape or block

important visual elements or scenic features present in the viewshed. Because the Project would not add infrastructure elements to the landscape that are appreciably different from those present under existing conditions and would not block important visual elements, the visual change to the existing character and visual quality of the site would be low-to-moderate. The Project would not significantly alter the existing character of the site and surroundings.

Figure 3.2-3, Viewpoint 2 shows an existing and simulated view of the site looking west from W. Admas Avenue. The open agricultural visual landscape would be modified by structures such as the solar arrays and the Project substation to the west, which would be visible to motorists driving along this roadway. Given that there are several other solar facilities and transmission lines/infrastructure elements in the vicinity, the degree of visual change that would result from the Project would be low to moderate from this perspective.

Figure 3.2-4, Viewpoint 3 (lower image) depicts a simulated view of the Project as may be viewed by motorists traveling south along SR 33. The presence of the proposed solar panels and associated infrastructure would moderately alter views of the site and surroundings by adding these elements to the landscape. However, as noted in the environmental setting, there are other existing industrial elements in the viewshed. Under existing conditions, for example, there are other electrical infrastructure elements present including a substation located at the corner of SR 33 and W. Adams Avenue and another solar facility adjacent to that site. Additionally, the Project elements would not dominate the landscape or block important visual elements or scenic features present in the viewshed. Because the Project would not add infrastructure elements to the landscape that are appreciably different from those present under existing conditions, and would not block important visual elements, the visual change to the existing character and visual quality of the site would be low-to-moderate. The Project would not significantly alter the existing character of the site and surroundings.

Figure 3.2-5, Viewpoint 4 shows an existing and simulated view of the site looking northwest from W. Manning Avenue. Given that there are several other solar facilities and transmission lines/infrastructure elements in the vicinity, the degree of visual change that would result from the Project would be low to moderate from this perspective.

The above analysis of KOPs demonstrates that the Project elements would introduce a low to moderate level of visual contrast to the existing landscape depending on the viewing location. Project elements would not block or impair any unique scenic features in the viewshed. Overall, given the energy infrastructure-related industrial nature of views in the Project vicinity and the low-to-moderate sensitivity of viewers, the Project would introduce a level of visual change to local visual quality and character that would be less than significant. Impacts from Project operation and maintenance would be **less than significant**.

Mitigation: None required.



Existing Conditions



Simulated Conditions

SOURCE: ESA, 2025

Heartland Solar Project

Figure 3.2-2
Viewpoint 1

ESA



Existing Conditions



Simulated Conditions

SOURCE: ESA, 2025

Heartland Solar Project

Figure 3.2-3
Viewpoint 2

ESA



Existing Conditions



Simulated Conditions

SOURCE: ESA, 2025

Heartland Solar Project

Figure 3.2-4
Viewpoint 3

ESA



Existing Conditions



Simulated Conditions

SOURCE: ESA, 2025

Heartland Solar Project

Figure 3.2-5
Viewpoint 4

ESA

Criterion d) Whether the Project would create a new source of light and glare which would adversely affect day or nighttime views in the area.

Impact 3.2-2: The Heartland Solar Project would not create new sources of light and glare that would adversely affect day or nighttime views in the area. (*Less-than-Significant Impact*)

Construction of the Project would be expected to occur during daylight hours. Some nighttime activities may be performed such as electrical connection, inspection, and testing activities. However, such activities would be performed with temporary lighting that would be directed downward to focus illumination on 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.

Construction would involve increased vehicle traffic and the transport and use of construction equipment and materials. These activities temporarily would increase glare conditions near the Project site due to an increase in reflective materials on the Project site, potentially including construction equipment and vehicle windows. However, any increases in glare that would result from construction activities would be minimal and temporary. Only portions of the Project site would be actively under construction at any particular time. Any new temporary sources of glare would not be in any one fixed location and would be present at different locations according to the location of construction activities throughout the site. 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.

No existing lighting is present on the Project site. The Project would introduce limited lighting as described in Section 2.5.1.12, *Fencing, Lighting, and Site Security*, at the substation, operation and maintenance building, energy storage system area, and facility entrances as necessary for the safety and security of employees and the facilities. Lighting for outdoor locations that would only occasionally be visited would be controlled from local switches or photoelectric controllers (motion-activated) and wattage would be no higher than needed for safety purposes to reduce off-site/dark-sky light pollution. Project lighting also would be shielded or directed downward to minimize offsite impacts, including to nighttime skies, consistent with local requirements. Portable lighting would be used throughout the facility site by operation and maintenance staff as needed. Thus, the Project would not create a new source of light that would significantly adversely affect day or nighttime views in the area.

Photovoltaic (PV) solar panels can result in reflections and glare depending on the time of day, the angle of the sun, cloud cover, and other factors. However, PV panels are designed with surfaces coated to absorb as much light as possible, rather than to reflect it (NREL 2018). Although the panels can result in some reflection or glare, the glare created by PV panels is generally considered to be less than that created by water or common building materials such as metal, glass, and Portland white cement concrete (Shields 2010; Riley and Olson 2011). Based on a review of

existing technical documentation on the effect of glare produced from PV panels and its effect on aviation safety, the Massachusetts Department of Energy Resources states that such panels reflect only approximately 2.0 percent of incoming sunlight, given the anti-reflective glass designed to capture and retain the solar spectrum (Massachusetts Department of Energy Resources 2015).

The Project would be constructed using PV modules (i.e., assemblage of PV panels) of cadmium telluride semiconductor, also known as thin-film modules or crystalline silicon semiconductor modules. The PV modules would be mounted on horizontal, single axis tracker systems. The module arrays would be arranged in north-south oriented rows and would rotate to follow the sun throughout the day. The proposed solar panels have a low profile (typically 6 feet high, but generally no more than 18 feet high at the highest point during the day). These design specifications would minimize visual impacts relative to larger systems. The light reflected from the PV modules would travel above the line of sight of most if not all viewers – in this case, motorists on SR 33 and W. Adams Avenue. Additionally, the PV module tracking systems would position them so that the sun's rays are perpendicular to the face of the panel. Therefore, light reflected from the panel would be reflected back toward the sun. During midday conditions, light would be reflected upward toward the sky. Although the sun's position in relation to solar panels can, under certain conditions, cause glare that affects pilots and air traffic controllers, the Project is not proposed on or sufficiently near an airport or airstrip to result in a potential significant impact in this regard. The closest airports or airstrips to the Project site are the Stamoules private airfield, which is approximately 6.5 miles northwest of the Project site, and the San Joaquin Airport, which is approximately 9.5 miles east of the Project site. Accordingly, the Project would not cause a significant glare-related impact on the vision of pilots or air traffic controllers.

The impacts of both 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 that required for construction, any sources of glare would be minimal and temporary, and equipment would be moved between active working locations on the Project site.

For the reasons described, the Project would cause a **less-than-significant impact** relating to the creation of a new source of light or glare.

Mitigation: None required.

3.2.4.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Impact 3.2-3: The PG&E Components would affect aesthetic resources. (*Less-than-Significant Impact*)

There are no designated scenic vistas within the viewshed of the PG&E infrastructure location. Additionally, the PG&E infrastructure location does not contain any natural scenic resources or historic structures and is not located within view of any designated or eligible state scenic highways. For these reasons, there would be **no impact** under criteria a) and b).

During construction and decommissioning, the PG&E infrastructure components would entail use of the same types of vehicles and equipment in the same general locations as for the solar facility and onsite gen-tie line. Overall visual sensitivity of motorists on SR 33 and local roadways at or near the PG&E infrastructure components during these activity periods would be considered low to moderate as the duration of views would be brief and fleeting and activities would not impair or block any sensitive or unique visual resources or landscapes and therefore impacts related to visual resources associated with the PG&E infrastructure would be **less than significant**.

The PG&E infrastructure, once operational, would include a segment of the gen-tie line and facilities within the existing Tranquillity Switching Station. These improvements would appear similar and consistent with the existing infrastructure and would result in little noticeable change from existing conditions and would not be obvious from publicly accessible vantage points (e.g., any of the KOPs). The overall visual change associated with the addition of the Project, including the PG&E infrastructure, would be low to moderate, and impacts of the PG&E infrastructure from publicly accessible vantage points would be less than significant. Consequently, construction, operation, and decommissioning associated with the PG&E infrastructure would result in a **less-than-significant** impact under criterion c).

The PG&E facilities could have metallic structures, such as transformers and switching gear that could reflect glare. These structures would be sited within and similar to the structures within the existing Tranquillity Switching Station and would not be expected to generate new substantial glare that would affect viewers from nearby public viewpoints or roadways. As a result, impacts related to light and glare associated with the PG&E infrastructure would also be **less than significant** with respect to criterion d).

Mitigation: None required.

3.2.5 Cumulative Effects Analysis

The geographic scope of potential cumulative impacts to the existing visual character or quality of public views includes the viewshed along SR 33, W. Adams Avenue, and W. Manning Avenue and locations from which a viewer could see the Project along with other projects (where visual impacts could accumulate). Generally, projects located 3 or more miles distance from the Project site would not be visible within the same viewshed as the Project; nonetheless, projects within 5 miles of the Project site generally were considered for their potential to cause visual impacts that could combine with those of the Project to cause or contribute to a potential cumulative effect.

Ongoing visual effects of past projects are reflected in the environmental setting, including the visual impacts of existing solar facilities such as the existing Tranquillity Solar Project and PG&E Switching Station (approximately 2 miles south of the Project site) and Adams East solar project (less than 1 mile east of the solar facility, across SR 33). Section 3.1.3, *Cumulative Effects Approach*, identifies the following present or reasonably foreseeable future projects as within 3 miles of either the proposed solar facility: the Luna Valley, Scarlet and Sonrisa solar projects (each within approximately 1 mile) together with the PG&E infrastructure required to connect these facilities to the energy grid.

The timeframe during which cumulative impacts of the Project could occur would commence with onsite site preparation and construction activities and would conclude with the cessation of onsite decommissioning and reclamation activities.

The Project would result in a significant cumulative impact on aesthetics if it would cause or contribute to an impact that 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 of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality;

d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.

3.2.5.1 Cumulative Effects of the Heartland Solar Project

Criterion a)

As analyzed in Section 3.2.4.2, *Direct and Indirect Effects of the Heartland Solar Project*, the Project would have no impact due to a substantial adverse effect on a scenic vista because there are no designated scenic vistas in the Project vicinity. Therefore, the Project could not cause or contribute to a significant cumulative impact regarding criterion a). (*No Impact*)

Mitigation: None required.

Criterion b)

As analyzed in Section 3.2.4.2, *Direct and Indirect Effects of the Heartland Solar Project*, because the Project site is not located in a State scenic highway corridor and because there are no scenic resources in the Project study area, the Project would cause no impact with respect to scenic resources within a state scenic highway. Moreover, there are no rock outcroppings, few trees, and no historic buildings proposed for removal. Therefore, the Project could not cause or contribute to any cumulative impact regarding criterion b). (*No Impact*)

Mitigation: None required.

Criterion c)

Impact 3.2-1c: The Heartland Solar Project would not cause a cumulatively considerable contribution to a significant cumulative effect due to substantial degradation of the existing visual character or quality of public views of the facility site or its surroundings. (*Less-than-Significant Impact*)

The Project's incremental, less-than-significant impact would combine with the incremental impacts of other projects near the Project site, including industrial-appearing elements of energy and renewable energy infrastructure associated with the Tranquillity, Adams East, Luna Valley, Scarlet, and Sonrisa solar projects and their related energy storage facilities, power lines and other infrastructure. The relevant area currently reflects a visual character and quality of public views that reflect a mix of agricultural uses and energy related uses. The ongoing impacts of past projects contribute to existing conditions and are reflected in the environmental setting described in Section 3.2.2.2. In this visual context, additional energy uses are approved or proposed that generally coalesce around the SR 33 and Manning Avenue intersection. See Figure 3.1-1.

As discussed under Impact 3.2-1, the Project would introduce a level of visual change to local visual quality and character that would be less than significant. As discussed above, public viewing locations within a 5-mile radius of the Project site would be limited to motorists. These viewers would have a low to moderate visual sensitivity. The cumulative projects would add industrial elements adjacent to SR 33 and other local roadways that would create a weak to moderate visual contrast along the horizon. The solar panels would follow the existing line along the horizon but would introduce a more distinct and larger linear industrial form. The Project, considered along with other cumulative projects, would introduce a moderate visual contrast in the landscape and would decrease the amount of open agricultural space, but would not block important visual elements. Given the rate of travel along SR 33 and other roadways, motorists would pass the additional solar facilities quickly. Due to the low-profile nature of the PV arrays, these views would quickly diminish from greater distances. Therefore, the Project's incremental contribution to the character and quality of public views, in combination with the incremental impacts of other projects, would not result in a significant cumulative effect, and the Project's incremental impact would not be cumulatively considerable because the Project would be of comparable composition, size and scale and would blend with rather than be markedly distinguishable from substantially similar cumulative renewable energy development. In sum, due to the existing low to moderate visual sensitivity in the area, and the low to moderate visual contrast created by the Project and cumulative projects, cumulative impacts would be **less than significant** and the Project's incremental contribution to cumulative visual impacts would not be cumulatively considerable.

Mitigation: None required.

Criterion d)

Impact 3.2-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to the creation of new sources of light or glare that would adversely affect day or nighttime views in the area. (*Less-than-Significant Impact*)

As discussed under Impact 3.2-2, Project lighting would be directed downward to minimize light pollution and reduce effects. Solar panels would be low profile and made of non-reflective materials to decrease glare. As described in Section 3.2.2.2, *Environmental Setting*, the relevant area experiences limited daytime and nighttime lighting and minimal glare. Other cumulative projects that would cause incremental impacts that could combine with those of the Project also would generate minimal light and glare. See, e.g., Section 4.2.3.2 of the Tranquillity Solar Project Draft EIR, which requires that project's facility lighting to provide the minimum illumination needed to achieve safety and security objectives and be directed downward as well as shielded to avoid light trespass into adjacent areas (Fresno County 2014). See also Section 4.2.4.3 of the Luna Valley Solar Project Draft EIR, which concludes that the Luna Valley project would result in a less-than-significant impact due to light and glare (Fresno County 2021).

The Project's and each of the cumulative projects' daytime lighting would be limited to within respective project boundaries and so would not combine to cause a significant cumulative impact. Nighttime lighting of the Project and other cumulative projects would be minimal, limited to that necessary to maintain safety, and directed downward to avoid spillover onto adjacent properties; thus, the Project's less-than-significant incremental impact would not combine with the incremental nighttime lighting impacts of other projects to cause a significant adverse cumulative effect. There is no existing significant adverse condition due to glare in the relevant area. With the proposed design of the PV panel array, the Project's incremental, less-than-significant impact would not combine with the incremental impacts of other projects to cause or contribute to one. Therefore, the cumulative effect of the Project, when considered together with past, current, and reasonably foreseeable future development, would be less than significant.

Mitigation: None required.

3.2.5.2 Cumulative Effects of the PG&E Components

As described in Section 2.5.2 of Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kV gen-tie line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades would be made within the existing Tranquillity Switching Station footprint.

Impact 3.2-3c: The PG&E Components would not cause a cumulatively considerable contribution to a significant cumulative effect on aesthetic resources. (*Less-than-Significant Impact*)

There are no designated scenic vistas within the viewshed of the PG&E infrastructure location. Additionally, the PG&E infrastructure location does not contain any natural scenic resources or historic structures and is not located within view of any designated or eligible state scenic highways. For these reasons, the PG&E Components could not cause or contribute to a significant cumulative impact and there would be **no impact** under criteria a) and b).

The PG&E Components' incremental, less-than-significant impact to visual character would combine with the incremental impacts of other projects near the Project site, including industrial-appearing elements of energy and renewable energy infrastructure associated with the Tranquillity, Adams East, Luna Valley, Scarlet, and Sonrisa solar projects and their related energy storage facilities, power lines and other infrastructure. The relevant area currently reflects a visual character and quality of public views that reflect a mix of agricultural uses and energy related uses. As discussed above, public viewing locations within a 5-mile radius of the Project site would be limited to those used by motorists. These viewers would have a low to moderate visual sensitivity. The cumulative projects would add industrial elements adjacent to SR 33 and other local roadways, which would create a low to moderate visual contrast along the horizon. The PG&E infrastructure would include a segment of the gen-tie line and facilities within the existing Tranquillity Switching Station. These improvements would appear similar and consistent with the existing infrastructure and would result in little noticeable change from existing conditions. These components would not be obvious from publicly accessible vantage points (i.e., any of the KOPs). The overall visual change associated with the addition of the PG&E Components, would be low to moderate, and cumulative impacts of the PG&E Components and other nearby projects from publicly accessible vantage points would be less than significant. Therefore, in conjunction with the existing low to moderate visual sensitivity, cumulative impacts on visual quality would be **less than significant** and the incremental contribution of the PG&E Components would not be cumulatively considerable with respect to criterion c).

The PG&E Components include metallic structures, such as transformers and switching gear that could reflect glare. These structures would be sited within and resemble structures within the existing Tranquillity Switching Station and would not be expected to generate new substantial sources of glare that would affect viewers from nearby public viewpoints or roadways. As a result, impacts related to light and glare associated with the PG&E infrastructure would not combine with the incremental impacts of other projects to cause or contribute to one. Therefore, the cumulative effect of the PG&E Components, when considered along with past, current, and reasonably foreseeable future development, would be **less than significant** with respect to criterion d).

Mitigation: None required.

3.2.6 References

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Fresno County. 2014. *Draft Environmental Impact Report for the Tranquillity Solar Generating Facility Project*. May 2014.

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3.3 Agriculture and Forestry Resources

This section identifies and evaluates issues related to Agriculture and Forestry Resources, including designated categories of farmland, agricultural zoning and Williamson Act contracts, and forest resources. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). Fresno County (the County) received no scoping input regarding Agriculture and Forestry Resources (**Appendix A**, *Scoping Report*).

This analysis is based in part on the Project-specific Land Evaluation and Site Assessment (LESA) (**Appendix C**, *Agricultural Resources*), which was prepared on behalf of the County in support of its evaluation of potential impacts of the Project.

3.3.1 Setting

3.3.1.1 Study Area

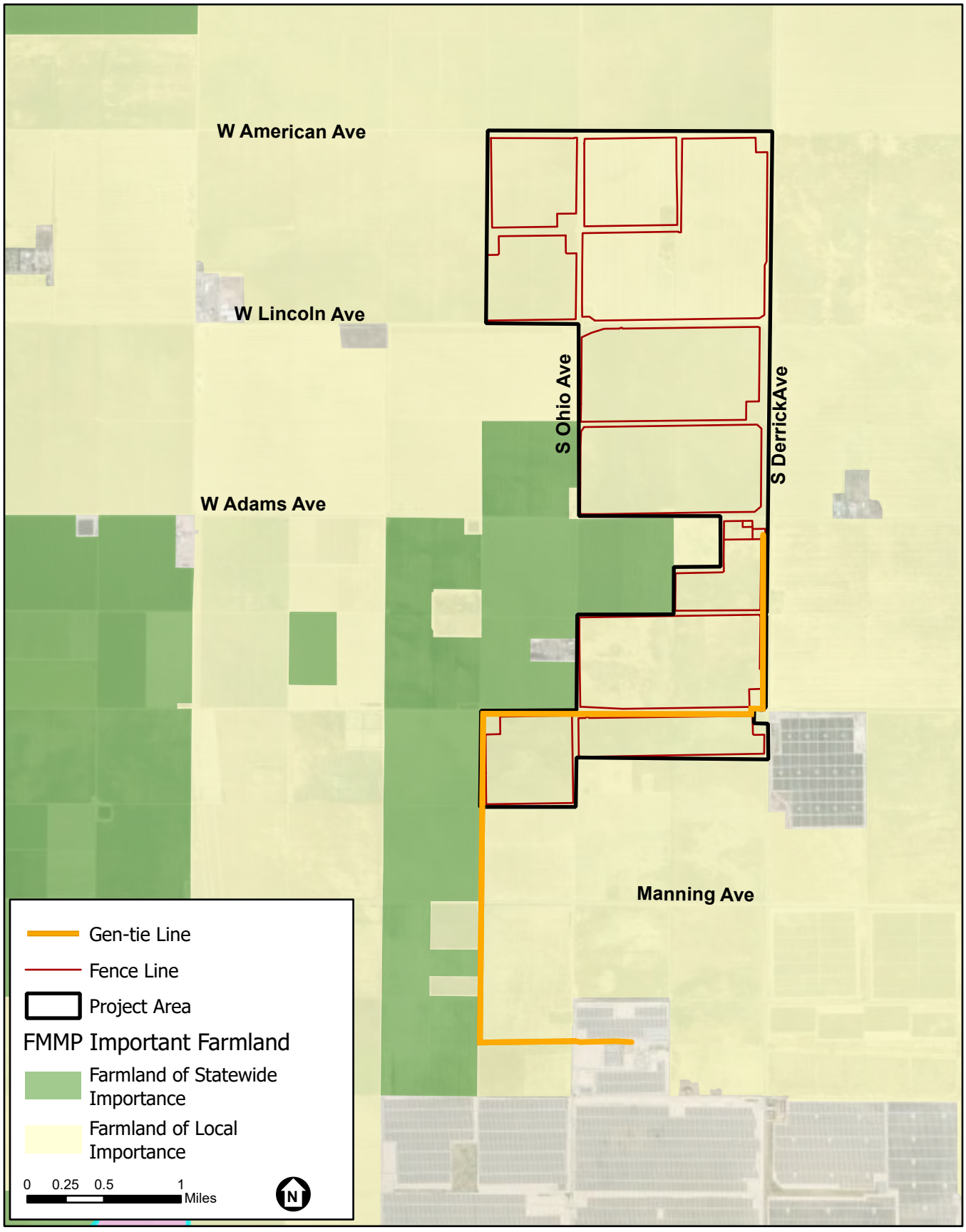
The study area for this analysis of Agriculture and Forestry Resources includes farmland within Fresno County (including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance, as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program [FMMP] of the California Resources Agency), and forest land and timberland within Fresno County that meets the definitions below. For purposes of the LESA modeling, the study area includes the Project's "zone of influence," which is defined to include the Project site and the surrounding 0.25-mile area.

3.3.1.2 Environmental Setting

Agriculture Resources

As described in Section 2.3, *Existing Land Uses,* the Project site historically was used for irrigated agricultural purposes. Irrigated farming no longer occurs on the site due to lack of drainage, salt accumulation in the soil, and a legal covenant that precludes irrigation (see Section 3.3.1.3, *Regulatory Setting*, for details). The site does not receive an allocation of surface water from Westlands Water District (WWD). In the past 10 years, the Project site has been intermittently dry farmed for grain or forage crops or has lain fallow. Abandoned irrigation and drainage features are present throughout the site but are not in use. When the property is not leased for dry farming, WWD cultivates the property to control weeds and pests (Appendix C).

The Project site is mapped as Farmland of Local Importance under the California Department of Conservation's FMMP. The Project site is adjacent to parcels mapped as Farmland of Local Importance and Farmland of Statewide Importance. Other Farmland of Statewide Importance is located to the east and northeast of the Project site (CDOC 2020). The existing Tranquillity Switching Station and the Project's proposed connection to it within the Tranquillity site are located on land mapped as Urban and Built-up Land (CDOC 2020). See **Figure 3.3-1**, *FMMP Important Farmland in the Project Vicinity*. Definitions of the Department of Conservation's farmland mapping categories are provided in Section 3.3.1.3, *Regulatory Setting*.



SOURCE: ESA 2025; ESRI 2025; Tetra Tech, 2025; CDOC, 2022

Heartland Solar Project

Figure 3.3-1

FMMP Important Farmland in the Project Vicinity

None of the parcels that comprise the Project site is subject to a Williamson Act contract (defined below in Section 3.3.1.3, *Regulatory Setting*). However, Williamson Act-contracted parcels are located immediately adjacent to the west of the Project site; a small parcel of contracted land also is located to the east of the Project site, south of Adams Avenue and east of State Route (SR) 33 (Conservation Biology Institute 2015; Fresno County 2021).

Existing agricultural uses, including non-irrigated fields owned mostly by the WWD, generally surround the Project site. These surrounding properties generally have a land use pattern of dry farming and fallowing rotation that is similar to the Project site's land use pattern. Neighboring agricultural uses include orchards and forage and grain crops. Multiple solar energy facilities are operating or under development in the surrounding area, including the Tranquillity, Adams East, Luna Valley, and Scarlet solar projects.

Forestry Resources

Almost all of the lands available for timber production in Fresno County lie within the southern part of the Sierra National Forest and the northern portion of the Sequoia National Forest (Fresno County 2024). The Project site does not contain any land defined as forest land (as defined by Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or land zoned Timberland Production (as defined by Government Code Section 51104[g]). A limited number of tamarisk and eucalyptus trees are located on and near the Project site (**Appendix E**, *Biological Resources*).

3.3.1.3 Regulatory Setting

Federal

Britz and Sumner Peck Ranch, Inc. Settlement Agreements with the U.S. Bureau of Reclamation

To provide water to the west side of the San Joaquin Valley, the U.S. Bureau of Reclamation (Reclamation) and the State of California reached an agreement in 1961 for the federal government to construct the San Luis Unit of the Central Valley Project. The WWD is located within the San Luis Unit. As part of the agreement, Congress's authorizing legislation directed Reclamation to collect and dispose of drainage water to address issues associated with poor drainage and disposal of irrigation water in the affected area (WWD 2011).

Reclamation began delivering water to the WWD in 1967. Construction of the water conveyance (drainage) improvements began in 1968 and ended prematurely in 1975 at the Kesterson Reservoir, after only 80 miles of the planned 207 miles of the proposed drainage infrastructure had been completed (Congressional Research Service 2015). In 1983, studies identifying deformity and mortality of waterfowl nesting at the Kesterson Reservoir suggested that these impacts were caused by selenium-laden water coming from soils within the WWD. Reclamation closed the Kesterson Reservoir, capped the drains, and has not provided drainage within the WWD since June 1986. Litigation ensued. *Firebaugh Canal Co. v. United States*, Case No. CV-F-88-634 (E.D. Cal.); *Sumner Peck Ranch, Inc. v. Bureau of Reclamation*, Case No. CV-F-91-048 (E.D. Cal.); *Firebaugh Canal Co. v. United States* (9th Cir. 2000) 203 F.3d 568, 571.

In late 2002, the Bureau of Reclamation, WWD, and approximately 100 landowners within WWD boundaries agreed to settle the claims. The Britz settlement agreement resolved claims relating to approximately 3,000 acres and the Sumner Peck Ranch, Inc. settlement agreement resolved claims relating to approximately 34,000 acres (U.S. Bureau of Reclamation 2002). The federal government's September 16, 2015, Notice of Filing of Settlement Agreement in the matter includes a List of Lands Permanently Retired from Irrigated Agriculture. Irrigation is precluded on nine of the parcels that make up the Project site.

State

California Farmland Mapping and Monitoring Program

The California Department of Conservation's FMMP provides a classification system for farmland based on technical soil ratings and current land use (CDOC 2023). The minimum land use mapping unit is 10 acres unless specified; smaller units of land are incorporated into the surrounding map classifications.

For the purposes of this environmental analysis, the term "Farmland" refers to FMMP map categories *Prime Farmland*, *Unique Farmland*, and *Farmland of Statewide Importance* (hereafter collectively referred to as "Farmland"). Generally, any conversion of land from one of these categories to a lesser quality category or a non-agricultural use is considered an adverse impact. These map categories are defined as follows (CDOC 2023):

> **Prime Farmland:** Land which has the best combination of physical and chemical features able to sustain long term agricultural production. It 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.
>
> **Unique Farmland:** Farmland of less 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.
>
> **Farmland of Statewide Importance:** Land that is similar to *Prime Farmland* but with minor shortcomings, such as greater slopes or less ability to hold and store moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

As noted above, none of the Project site is mapped as Farmland. Instead, each of the Project parcels is mapped as one of the FMMP's non-Farmland categories, one of which is Farmland of Local Importance and another of which is Urban and Built-up Land. In Fresno County, Farmland of Local Importance includes all farmable lands that do not meet the definitions of Prime, Statewide, or Unique. This includes land that is or has been used for dryland farming, irrigated pasture, confined livestock and dairy, poultry facilities, aquaculture and grazing land (CDOC 2020). Land mapped as Urban and Built-up Land is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Such lands are used for sewage treatment, water control structures, and other developed purposes (CDOC 2023). Neither Farmland of Local Importance nor Urban and Built-up Land is included in the definition of

agriculture within Public Resources Code Section 21060.1; therefore, these categories of land are not the focus of the analysis of agriculture and forestry impacts.

California Public Resources Code

The California Public Resources Code governs forestry, forests, and forest resources, as well as range and forage lands, within the state. "Forest land" is defined by Public Resources Code Section 12220(g) as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." "Timberland" is defined by Public Resources Code Section 4526 as "land, other than land owned by the federal government..., which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees."

California Government Code

Chapter 6.7 of the Government Code (Sections 51100-51155) regulates timberlands within the state. "Timberland production zone" is defined in Government Code Section 51104(g) as an area that has been zoned pursuant to Section 51112 or Section 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses. In this context, "compatible uses" include any use that "does not significantly detract from the use of the property for, or inhibit, growing and harvesting timber" (Government Code Section 51104[h]). With respect to the general plans of cities and counties, "timberland preserve zone" means "timberland production zone."

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. The 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[1] in agricultural or open space uses for a period of at least 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 is not proposed on lands subject to a Williamson Act contract.

Local

Fresno County Solar Facility Guidelines

The Fresno County Solar Facility Guidelines (Fresno County 2017) include provisions applicable to the review process for solar facility applications that relate to agricultural resources. For

[1] An agricultural preserve defines the boundary of an area within which a city or county would be willing to enter into Williamson Act contracts with landowners: The boundary is designated by resolution of the city council or board of supervisors with jurisdiction over the property. Agricultural preserves generally must be at least 100 acres in size.

analysis of the Project's consistency with the Solar Facility Guidelines as a whole, see Appendix I2. Guidelines specific to agricultural resources include:

1. Submission of information regarding historical agricultural use.
2. Submission of information regarding source of water.
3. Identification of current status with respect to Williamson Act, conservation easements, or other similar designation.
4. Identification of soil type and mapping units.
5. 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).
6. A Reclamation Plan detailing the time frame and approach to restoration of the site to agricultural use.
7. Details of efforts to locate the project on non-agricultural land.
8. Development of a Weed and Pest Management Plan.
9. Acknowledgement of the County's Right to Farm Ordinance.

Fresno County Right-to-Farm Ordinance

For certain activities within 300 feet of an AE Zone District, Section 17.72.075(A) of the Fresno County Code of Ordinances requires the 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 and County General Plan Policy LU-A.15 (described below), Heartland Solar 1, LLC would be required to record such a notice prior to the County's issuance of permits for the Project and anticipates that the requirement would be made a condition of approval (see **Appendix I2**, *Consistency with Fresno County's Solar Facility Guidelines*).

Fresno County General Plan

The Agriculture and Land Use Element of the County's General Plan describes land use designations and development standards for unincorporated land within 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. This designation 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 2024). The following General Plan policies and programs relate to this analysis:

Goal LU-A: To promote the long-term conservation of productive and potentially productive agricultural lands and to accommodate agricultural-support services and agriculturally-related activities that support the viability of agriculture and further the County's economic development goals.

Policy LU-A.1: Agricultural Land Conservation. 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 or can be provided consistent with the adopted General or Community Plan.

Policy LU-A.2: Agriculture-related Uses. 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.

Policy LU-A.3: Special Agricultural Uses. 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. Approval of these and similar uses in areas designated Agriculture shall be subject to (a) through (d) of 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 (0.25) mile radius;

d. A probable workforce should be located nearby or be readily available;

Criteria (e) through (h) relate to the approval of commercial centers, value-added agricultural processing facilities, churches, schools and existing commercial uses and are not applicable to the Project.

Policy LU-A.12: Agricultural Protection. In adopting land uses policies, regulations, and programs, the County shall seek to protect agricultural activities from the encroachment of incompatible land uses.

Policy LU-A.13: Agricultural Buffers. The County shall protect agricultural operations from conflicts with nonagricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations. Additionally, the County shall consider buffers between agricultural uses and proposed sensitive receptors when processing discretionary land use applications.

Policy LU-A.14: Agricultural Land Conversion Review. 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.

Policy LU-A.15: Right to Farm Notice: The County shall generally condition discretionary permits for development within or adjacent to agricultural areas upon the recording of a Right-to-Farm Notice, which is an acknowledgment that residents in the area should be prepared to accept the inconveniences and discomfort associated with normal farming activities and that an established agricultural operation shall not be considered a nuisance due to changes in the surrounding area.

Policy LU-A.16: Agricultural Land Preservation Programs. The County should implement agricultural land preservation programs for long-term conservation of viable agricultural operations. Examples of programs to be considered include: land trusts; conservation easements; dedication incentives; new and continued Williamson Act contracts; Farmland Security Act contracts; the California Farmland Conservancy Program; agricultural education programs; zoning regulations; agricultural mitigation fee program; urban growth boundaries; transfer of development rights; purchase of development rights; and agricultural buffer policies.

Policy LU-A.17: Williamson Act Contracts. The County should accept Williamson Act contracts on all designated agricultural land subject to location, acreage, and use limitations established by the County provided that the County receives full subvention payment as partial replacement of local property tax revenue foregone as a result of participating in the Williamson Act program. All development and uses and activities that occur on land under contract shall comply with the requirements of the California Land Conservation Act and adopted County Rules.

Policy LU-A.18: Land Improvement Programs. The County shall encourage land improvement programs to increase soil productivity in areas containing lesser quality agricultural soils.

Policy LU-A.19: Reduced Soil Erosion. The County shall encourage landowners to participate in programs that reduce soil erosion and increase soil productivity. To this end, the County shall promote coordination between the Natural Resources Conservation Service, Resource Conservation Districts, UC [University of California] Cooperative Extension, and other agencies and organizations.

Policy LU-A.23: Farmland Conversion. For discretionary land use projects that are not directly related to or supportive of agricultural uses and which propose the permanent conversion of twenty acres or more of Prime Farmland, Unique Farmland or Farmland of Statewide Importance (as designated by the Farmland Mapping and Monitoring Program) to nonagricultural uses, the County shall consider and adopt feasible measures including, but not limited to:

- Acquisition of conservation easements at a 1:1 ratio for lands lost to nonagricultural uses.
- Fee title of agricultural mitigation land that may be held by a third party or the County.
- In lieu fees paid to the County that may be used to acquire future mitigation property.
- Mitigation banks.

The County may exempt projects from agricultural mitigation requirements when it has been determined that conversion is occurring pursuant to a local groundwater sustainability plan, or the project is for housing which is predominately for persons of low or moderate income as defined in section 50093 of the Health and Safety Code. Further, the County may exempt discretionary land use projects from agricultural mitigation requirements if it finds that the loss of agricultural land caused by the proposed conversion is outweighed by specific overriding economic, legal, social, technological, or other benefits of the conversion, as contemplated by section 21081(b) of the Public Resources Code.

Implementation 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 located in the AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) Zone District (Fresno County 2023). As indicated in Section 816.1 of the Fresno County Zoning Code, permitted uses in AE districts 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 AE districts subject to approval of a Director Review and Approval application (County Code Section 816.2[D]). Where, as here, a project is subject to two or more separate use permits, the County evaluates the entire project under the more-intensive process. Since the Unclassified Conditional Use Permit (CUP) process is more intensive than the Director Review Approval process, the County is reviewing the proposed substation as part of the Unclassified CUP process for the larger facility. Thus, the substation proposed as part of the Project would not require a separate Director Review Approval.

3.3.2 Significance Criteria

The Project would result in significant impacts to agriculture and forestry resources 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; 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.

3.3.3 Direct and Indirect Effects

3.3.3.1 Methodology

Examples of direct effects on Agriculture and Forestry resources include the conversion of agricultural lands to non-agricultural uses and conflicts with existing zoning or agricultural conservation contracts or easements. Indirect effects may include nuisances or other physical changes that result in the conversion to non-agricultural use or degradation of off-site agricultural lands. To assess potential impacts on agriculture and farmland, the County has considered and relied on the results of Project-specific LESA modeling (Appendix C), site-specific zoning for Fresno County, and mapping available pursuant to the FMMP. To assess potential impacts on forest resources, the County considered site zoning, site-specific environmental characteristics, and applicable definitions set forth in state law.

3.3.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion 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.

As described in Section 3.3.1.2, *Environmental Setting,* there is no Farmland as shown on the maps prepared pursuant to the FMMP of the California Resources Agency within the Heartland Solar Project site boundary. Therefore, the Heartland Solar Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use and there would be no impact under this criterion. *(No Impact)*

Mitigation: None required.

Criterion b) Whether the Project would conflict with existing zoning for agricultural use, or a Williamson Act contract.

The Heartland Solar Project would not conflict with existing zoning for agricultural use or with a Williamson Act contract, and so would have no impact with respect to this criterion b). *(No Impact)*

The Heartland Solar Project would not conflict with the AE-20 zoning designation since the proposed use may be allowed by discretionary approval of an Unclassified CUP on agricultural land in conformance with Fresno County Zoning Code Section 853(B). The Heartland Solar Project is not proposed to be located on lands subject to a Williamson Act contract; therefore, it would not conflict with one. Because the Project would not conflict with existing zoning for agricultural use or with a Williamson Act contract, it would cause no impact with respect to significance criterion b).

Mitigation: None required.

Criterion c) Whether the Project would 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).

As described in Section 3.3.1.2, *Environmental Setting*, the Heartland Solar Project site does not contain any land defined as forest land (as defined by Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or land zoned Timberland Production (as defined by Government Code Section 51104[g]). The current zoning of the Project site (AE-20) would remain unchanged if the Project were approved. Therefore, the Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production and there would be no impact under this criterion. *(No Impact)*

Mitigation: None required.

Criterion d) Whether the Project would result in the loss of forest land or conversion of forest land to non-forest use.

As described in Section 3.3.1.2, *Environmental Setting*, a limited number of tamarisk and eucalyptus trees are located on and near the Heartland Solar Project site. Due to the small number, these existing trees are not considered forest land. Therefore, the Project would not result in the loss of forest land or conversion of forest land to non-forest use and there would be no impact under this criterion. *(No Impact)*

Mitigation: None required.

Criterion 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 or conversion of forest land to non-forest use.

As described under significance criteria c) and d), the Heartland Solar Project site does not contain any land defined as forest land, timberland, or timberland zoned Timberland Production, and a limited number of tamarisk and eucalyptus trees are located on and near the site. Therefore, the Project would not result in the conversion of forest land to non-forest use. *(No Impact)*

Mitigation: None required.

Impact 3.3-1: The Heartland Solar Project would involve 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 Impact*)

As discussed in Section 3.3.1.2, *Environmental Setting*, the parcels adjacent to the western border of the Heartland Solar Project site are designated as Farmland of Statewide Importance. Existing solar energy facilities also operate to the south and east, including the Tranquillity and Adams East solar projects. Given the increased demand for renewable energy in California, development

of nearby property with a solar facility may encourage other landowners, including those of the adjacent Farmland, to determine that the conversion of some or all of their land holdings to non-agricultural use is economically feasible. Therefore, indirect conversion of off-site Farmland could occur.

The California Agricultural LESA Model rates the potential significance of the conversion of an agricultural parcel that has a large proportion of surrounding land in agricultural production and/or protected resource land (e.g., Williamson Act contracted lands) more highly than one that has a relatively small percentage of surrounding land in agricultural production. Consideration for surrounding and protected agricultural lands are included as individual site assessment factors in the LESA Model, for which a 0.25-mile zone of influence around the Project site is defined (CDOC 1997). The LESA prepared for the Project shows that, while the Project site has a large percentage of surrounding land in agricultural production, it also is adjacent to a relatively low percentage of protected resource land. Taken together with the Project's land evaluation factors (suitability of soils for agriculture) and water resources availability, the Project would not have a significant impact on agricultural land use within the site or its zone of influence. Therefore, based on LESA model results, the Project would cause a less-than-significant impact on agricultural resources.

Additionally, many of the adjacent parcels designated as Farmland of Statewide Importance are under Williamson Act contracts. These parcels would be required to remain in agricultural use for at least a 10-year period unless the contracts are petitioned for cancellation by the landowners, subject to approval by the County Board of Supervisors. Conversion of these parcels to non-agricultural use would therefore require further discretionary review and approval before they could be removed from agricultural use. It would be speculative to assume that the Project would result in petitions by the owners of other parcels landowners to remove their property from the Williamson Act program at this time because there are no pending applications for such actions.

As discussed under significance criterion a), the Heartland Solar Project would not convert any Farmland to non-agricultural use. In addition, the Project would limit impacts to adjacent agricultural land uses by maintaining a buffer between the proposed energy-related uses and adjacent agricultural operations and implementing a reclamation plan to return the site to a state of readiness for agricultural use after Project decommissioning, in accordance with General Plan Policy LU-A.13 and the Fresno County Solar Facility Guidelines (see Appendix B2, *Preliminary Closure, Decommissioning, and Reclamation Plan*, and Appendix I2, *Consistency with Fresno County's Solar Facility Guidelines*). The Pest Management Plan proposed as part of the Heartland Solar Project (see Appendix B1, *Pest Management Plan*) also would be implemented to control the introduction or establishment of pests or weeds during Project activities. Implementation of this plan would prevent the Project from becoming a nuisance to adjacent agricultural operations through the introduction of pests (including rodents) or weeds. Additionally, pursuant to Section 17.72.075(A) of the Fresno County Code of Ordinances, Heartland Solar 1, LLC would be required to record with the County Recorder a Right-to-Farm Notice indicating that adjacent agricultural operations shall not become a nuisance due to the changed condition of the Project site. These measures would be a standard condition of approval of the CUP application submitted for the Project. Independently enforceable legal requirements governing

stormwater and dust control measures are identified in Section 3.11, *Hydrology and Water Quality*, and in Section 3.4, *Air Quality*, respectively. Consistency with those legal requirements (subject to oversight and enforcement by the agencies with jurisdiction over the water quality and air quality) would result in appropriate management of erosion, sedimentation, and dust created by the Project's construction-related soil disturbance. These measures would ensure that the Project would have no impact on soils on the site or on parcels surrounding the site. Furthermore, the Project would make no other changes to the existing environment that would affect the defining characteristics of off-site Farmland, such as soil quality or water availability.

The Project would not directly convert any Farmland and the LESA found the Project would not have a significant impact on agricultural land use within the site or its zone of influence. Therefore, indirect impacts related to conversion of Farmland to non-agricultural use would be less than significant.

Mitigation: None required.

3.3.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the off-site point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

The PG&E Components are not proposed upon Prime Farmland, Unique Farmland or Farmland of Statewide Importance. There is no farmland of these types shown on the maps prepared pursuant to the FMMP of the California Department of Conservation within the Project site boundary nor in the sites of the proposed PG&E Components. Therefore, the PG&E Components would not convert such farmland to a non-agricultural use and there would be no impact under criterion a). Because the PG&E Components would not conflict with existing zoning for agricultural use or with a Williamson Act contract, the PG&E Components would also cause no impact with respect to criterion b). Similarly, the PG&E Components would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production nor would it result in the loss of forest land or conversion of forest land to non-forest use and there would be no impact under criteria c) or d). Under criterion e), the Project as a whole would not result in the conversion of forest land to non-forest use. Because the Tranquillity Switching Station is currently used for energy-related purposes on land owned by PG&E, no conversion of Farmland to non-agricultural use would occur and there would be no impact under criterion e). *(No Impact)*

Mitigation: None required.

3.3.4 Cumulative Effects Analysis

As discussed above, the Project would result in no impact with respect to conversion of Farmland to non-agricultural use, conflict with existing zoning for agricultural use or with Williamson Act contracts, and forest land or timberland. Therefore, the Project could not cause or contribute to any potential significant cumulative impact to these resource areas. The potential for the Project to cause or contribute to a potential significant cumulative impact with respect to the remaining Agriculture Resources consideration is evaluated below.

The geographic context for potential cumulative impacts related to other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use is Fresno County.

3.3.4.1 Cumulative Effects of the Heartland Solar Project

Criterion a)

Because, as described in Section 3.3.3.3, *Direct and Indirect Effects*, the Project would cause no impact due to a conversion of Farmland, as shown on FMMP maps to non-agricultural use, it could not cause or contribute to any cumulative effect related to criterion a). (*No Impact*)

Mitigation: None required.

Criterion b)

Because the Project would cause no impact due to a conflict with existing zoning for agricultural use or a Williamson Act contract, it could not cause or contribute to any cumulative effect related to criterion b). (*No Impact*)

Mitigation: None required.

Criterion c)

Because the Project would cause no impact due to a conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production, it could not cause or contribute to any cumulative effect related to criterion c). (*No Impact*).

Mitigation: None required.

Criterion d)

Because the Project would cause no impact resulting in the loss of forest land or conversion of forest land to non-forest use, it could not cause or contribute to any cumulative effect related to criterion d). (*No Impact*).

Mitigation: None required.

Criterion e)

Impact 3.3-1c: The Project would not cause or contribute to a significant cumulative effect due to changes caused in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. (*Less-than-Significant Impact*)

Ongoing impacts of past projects on Agriculture Resources are reflected in the environmental setting described in Section 3.3.1.2 and specifically include the conversion of agricultural uses to solar facilities as part of the 322.4-acre Adams East solar project adjacent to the proposed site and the 3,732-acre Tranquillity solar project to the south of the Project site. There are three other projects listed in Table 3.1-1 in Section 3.1.3, *Cumulative Effects Approach*, which, if approved and constructed, would cause impacts that could combine with those of the Project to result in an adverse cumulative impact. These are the 2,300-acre Sonrisa Solar Project adjacent to the east of the Project site, the 1,300-acre Luna Valley Solar Project located adjacent to the south of the Project site, and the 4,069-acre Scarlet Solar Energy Project located less than 1 mile to the southeast of the Project site. The Sonrisa Solar Project is located on Farmland of Local Importance and is not located adjacent to any Farmland (CDOC 2020). Accordingly, the Sonrisa Solar Project would not contribute any direct or indirect incremental impact to cumulative conditions relating to the potential conversion of Farmland. Even without the Sonrisa project, collectively, these past, present, and reasonably foreseeable future projects together with the Project could combine to result in conversion of agricultural land that indirectly would result in the encroachment of development that results in Farmland conversion to non-agricultural use. For the purposes of this analysis, this would be a significant impact.

The Heartland Solar Project would have a less-than-significant indirect impact related to potential conversion of adjacent off-site Farmland to non-agricultural use. Because this incremental impact could contribute to a potential significant cumulative impact, the County has considered whether the contribution would be cumulatively considerable. Similar to the proposed Heartland Solar Project, the Luna Valley Solar Project is located on Farmland of Local Importance and is adjacent to Farmland of Statewide Importance. The Scarlet Solar Project is located on Farmland of Statewide Importance and Farmland of Local Importance (CDOC 2020). As the Project and Luna Valley Solar Project would be located solely on Farmland of Local Importance, they would not directly convert any Farmland, in contrast with the Scarlet Solar Project, which would directly convert Farmland. As discussed under Impact 3.3-1 above, even though the Farmland adjacent to the Project site is subject to Williamson Act contracts, the LESA (Appendix C) found no significant impact on agricultural land use within the Heartland Solar Project's zone of influence. Supported by that analysis, the Project's less-than-significant indirect incremental impact would not be cumulatively considerable when combined with the incremental impacts of other cumulative projects. Therefore, the Heartland Solar Project's cumulative effect would be less than significant.

Mitigation: None required.

3.3.4.2 Cumulative Effects of the PG&E Components

Because the PG&E Components would cause no impact under criterion a), b), c), d), or e), they could not cause or contribute to any cumulative effect related to these criteria. (*No Impact*)

Mitigation: None required.

3.3.5 References

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3.4 Air Quality

This section identifies and evaluates issues related to the applicable air quality plan, criteria pollutants, other pollutants, and other emissions. It describes the physical and regulatory setting, identifies the criteria used to evaluate the significance of potential impacts, explains the methods used in evaluating these impacts, and provides the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project).

This analysis is based in part on the *Air Quality and Greenhouse Gas Emissions Technical Report* prepared by Dudek (Appendix D1). The preparers of this Draft EIR independently reviewed this and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance, in combination with other materials included in the formal record, in the preparation of this Draft EIR. In addition, to substantiate the maximum daily on-site exhaust emissions for the solar facility, a Supplement was prepared that includes the calculations for those emissions.

The County received scoping comments from the San Joaquin Valley Air Pollution Control District (SJVAPCD) pertaining to air quality emissions (Appendix A, *Scoping Report*). SJVAPCD suggested that emissions from the construction and operation of the Project as initially proposed may exceed the significance thresholds as identified in its *Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a) and stated that if significant air quality impacts are identified, then the implementation of a Voluntary Emission Reduction Agreement (VERA) for the Project should be considered. The SJVAPCD also recommended that the Project be evaluated for potential health impacts to surrounding sensitive receptors and that if emissions exceed 100 pounds per day of any pollutant, an ambient air quality analysis (AAQA) should be performed. The County reviewed and considered this input in preparing the Draft EIR.

3.4.1 Setting

3.4.1.1 Study Area

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 a portion 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 (SJVAPCD 2015a). The study area for purposes of this analysis of potential impacts to air quality consists of the Air Basin.

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. As a result, the Air Basin is highly susceptible to pollutant accumulation.

The average daily maximum and minimum summer temperatures (i.e., July) in Five Points, approximately 20 miles southeast of the Project site, are approximately 98 degrees Fahrenheit (°F) and 63°F, respectively, and the average daily maximum and minimum winter (i.e., January) temperatures are approximately 55°F and 36°F, respectively. Average annual precipitation is approximately 7 inches (WRCC 2023).

3.4.1.2 Environmental Setting

Criteria Air Pollutants

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 air pollutants of 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 reactive organic gases (ROG) and nitrogen oxides (NO_x). ROG 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 3 hours.

Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of ROG 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 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. Reduction in the oxygen-carrying capacity of the blood can cause headaches, nausea, dizziness, and fatigue; impair the central nervous system function; and induce angina (chest pain) in persons with serious heart disease.

Particulate Matter

Particulates less than 10 microns in diameter (PM_{10}) and less than 2.5 microns 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. Particulates also can damage materials and reduce visibility. Research has indicated that there are associations between increased levels of ambient particulate matter and increased adverse respiratory health.

Other Criteria Pollutants

Sulfur oxides (SO_X) are compounds of sulfur and oxygen molecules. Sulfur dioxide (SO_2) is the primary form of SO_X in the atmosphere and 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 previously 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 the formation of ozone are referred to and regulated as ROG. ROG is not a criteria air pollutant but is a precursor compound for ozone, a criteria air pollutant. 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.

Toxic Air Contaminants

According to California Health and Safety Code Section 39655, a *toxic air contaminant* (TAC) is "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." The California

Air Resources Board (CARB) has identified 189 substances known to have or may have adverse effects on human health or the environment as TACs. CARB classified "particulate emissions from diesel-fueled engines" (17 California Code of Regulations [Cal. Code Regs.] Section 93000) as a TAC in August 1998. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines, including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70 percent of all airborne cancer risk in California is associated with DPM. To reduce the cancer risk associated with DPM, CARB adopted the Diesel Risk Reduction Plan in 2000 (CARB 2000).

Valley Fever

Valley Fever (also known as Coccidioidomycosis) is an infectious disease caused by the fungus *Coccidioides immitis*. Valley Fever is also known as San Joaquin Valley Fever, Desert Fever, or Cocci. Infection is caused by inhalation of *Coccidioides immitis* spores that have become airborne when dry, dusty soil or dirt is disturbed by natural processes such as wind or earthquakes, or by human-induced ground disturbing activities such as construction and farming. High winds can carry dust containing the spores long distances.

The California Department of Public Health (CDPH) received 7,252 and 8,030 new Valley Fever case reports in 2020 and 2021, respectively (CDPH 2022). Coccidioidomycosis remains an important public health problem in California. As a population with more than 20 cases per year of Valley Fever per 100,000 people, Fresno County is considered "highly endemic" (CDIR 2022), and western Fresno County is considered an area of elevated Valley Fever activity (Fresno County 2023a).

The Centers for Disease Control and Prevention (CDC) and Fresno County report that farm workers, construction workers, others who engage in soil-disturbing activities, and anyone spending time outdoors in western Fresno County are at risk for contracting Valley Fever (CDC 2022a; Fresno County 2023a, 2023b). Those most at risk of developing severe symptoms include Hispanics, African Americans, Filipinos, pregnant women, adults of older age groups, and people with weakened immune systems (CDC 2022b). Most people infected with Valley Fever have no symptoms, but 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). Valley Fever is not contagious, and secondary infections are rare. On average, there were approximately 200 Valley Fever-associated deaths each year (i.e., deaths in which Valley Fever was listed as a primary or contributing cause on a death certificate) in the United States between 1999 and 2019 (CDC 2022a). There is currently no vaccine; however, efforts to develop a vaccine are ongoing (CDPH 2022).

Existing Air Quality

The SJVAPCD operates a regional monitoring network that measures the ambient concentrations of criteria pollutants. Existing and probable future levels of air quality in the Air Basin can 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 multiple locations and associated air quality data statistics are posted online by CARB. Background ambient concentrations of pollutants are determined by pollutant emissions in a given area, topography, and meteorological conditions for that area. As a result, background concentrations can vary among different locations within Fresno County. Areas located close together with similar topography 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 0.4 mile away from the Project site; the Tranquillity Station monitors ozone and $PM_{2.5}$. The closest station that measures PM_{10} and NO_2 concentrations is the Fresno-Drummond monitoring station, which is located approximately 36 miles away from the Project site. The closest station that measures CO concentrations is the Fresno-First Street monitoring station located approximately 35 miles away. This analysis considers these measurements to be representative of the air quality conditions in the vicinity of the Project site. CO and SO_2 concentrations no longer exceed health-based standards within California and CARB no longer post air quality data statistics online for those pollutants.

Table 3.4-1 shows a 5-year summary of ozone and $PM_{2.5}$ data collected at the Tranquillity monitoring station, PM_{10} and NO_2 data collected at the Fresno-Drummond monitoring station, and CO data collected at the Fresno-First Street monitoring station. The table also compares these data to the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), which are presented in more detail in **Table 3.4-2**. As shown in Table 3.4-1, the state and national 8-hour ozone standards, the national 24-hour $PM_{2.5}$ standard, and the state and national 24-hour and annual average PM_{10} standards have been exceeded on multiple days between 2017 and 2021. The state annual average $PM_{2.5}$, state and national standards for CO, the state and national standards for NO_2, and 1-hour ozone standard were not exceeded during the 5-year period.

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 and duration of exposure to air pollutants. The SJVAPCD considers hospitals, schools, parks, playgrounds, daycare centers, nursing homes, convalescent facilities, and residential areas as sensitive receptor land uses (SJVAPCD 2015a). Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with greater associated exposure to ambient air quality. Outdoor 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. For this Project, the closest sensitive receptor is a home located approximately 80 feet west of the Project site boundary.

TABLE 3.4-1
AIR QUALITY DATA SUMMARY IN THE PROJECT AREA

Pollutant	Standard	Monitoring Data by Year				
		2017	2018	2019	2020	2021
Ozone, O_3						
Highest 1-Hour Average		0.09	0.09	0.08	0.09	0.09
Days over State Standard	0.09 ppm	0	0	0	0	0
Highest 8-Hour Average		**0.076**	**0.083**	**0.071**	**0.079**	**0.080**
Days over State/National Standard[a]	0.070 ppm	10	7	3	3	5
Fine Particulate Matter, $PM_{2.5}$						
Highest 24-Hour Average		**62.4**	**94.5**	20.3	**146.2**	**65.3**
Days over National Standard[b]	35 μg/m^3	6	16	0	21	7
State Annual Average	12 μg/m^3	8.3	11.1	5.8	11.4	8.9
Particulate Matter, PM_{10}						
Highest 24-Hour Average[c]		**120.5**	**154.8**	**181.3**	**349.2**	**149.8**
Days over State Standard[b]	50 μg/m^3	112	116	78	NA	NA
Days over National Standard[b]	150 μg/m^3	0	0[c]	6	6	NA
State Annual Average	20 μg/m^3	**44.2**	**45.7**	**39.6**	NA	NA
Carbon Monoxide, CO						
Highest 1-Hour Average		2.3	2.1	1.9	5.0	1.9
Days over State Standard	20 ppm	0	0	0	0	0
Days over National Standard	35 ppm	0	0	0	0	0
Highest 8-Hour Average		1.9	2.0	1.5	2.5	1.7
Days over State/National Standard	9 ppm	0	0	0	0	0
Nitrogen Dioxide, NO_2						
Highest 1-Hour Average		0.065	0.076	0.042	0.067	0.065
Days over State Standard	0.18 ppm	0	0	0	0	0
Days over National Standard	0.100 ppm	0	0	0	0	0
State/National Annual Average	0.030/0.053 ppm	NA	0.013	NA	NA	NA

NOTES: μg/m^3 = micrograms per cubic meter; NA = Not Available; ppm = parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard. Generally, state standards are not to be exceeded and national standards are not to be exceeded more than once per year.
Values in **bold** exceed the applicable standard.

a. In October 2015, the U.S. Environmental Protection Agency implemented a new national 8-hour ozone standard of 0.070 ppm.
b. Measurements of PM2.5 and PM10 are usually collected every 1 to 3 days. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored.
c. Highest measurements are relative to the state standard approach. Highest measurements relative to the national standard are lower.

SOURCES: CARB 2023, USEPA 2023

TABLE 3.4-2
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	0.070 ppm	Non-attainment	0.070 ppm	Non-attainment/ Extreme
	1-Hour	0.090 ppm	Non-attainment/ Severe	--	--
Carbon Monoxide	1-Hour	20 ppm	Attainment/ Unclassified	35 ppm	Attainment/ Unclassified
	8-Hour	9 ppm		9.0 ppm	
Nitrogen Dioxide	1-Hour	0.18 ppm	Attainment	0.100 ppm	Attainment/ Unclassified
	Annual	0.030 ppm		0.053 ppm	
Sulfur Dioxide	1-Hour	0.25 ppm	Attainment	0.075 ppm	Attainment/ Unclassified
	24-Hour	0.04 ppm	--	0.14 ppm	
	Annual	--	--	0.03 ppm	
Respirable Particulate Matter (PM_{10})	24-Hour	50 $\mu g/m^3$	Non-attainment	150 $\mu g/m^3$	Attainment
	Annual	20 $\mu g/m^3$		--	--
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	--	Attainment	35 $\mu g/m^3$	Non-attainment
	Annual	12 $\mu g/m^3$	Non-attainment	9.0 $\mu g/m^3$ [a]	Attainment[a]
Lead	30-Day	1.5 $\mu g/m^3$	Attainment	--	--
	Quarterly	--	--	1.5 $\mu g/m^3$	No Designation/ Classification

NOTES: $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million.

a. Effective May 6, 2024, the annual average national standard for $PM_{2.5}$ was lowered from 12.0 to 9.0 $\mu g/m^3$. The U.S. Environmental Protection Agency expects to finalize the attainment designations for the lower standard by February 2026. The attainment designation shown above is with respect to the old standard.

SOURCES: SJVAPCD 2023a, USEPA 2024

3.4.1.3 Regulatory Setting

Criteria Air Pollutants

Regulation of air pollution is achieved through both NAAQS and CAAQS and emission limits for individual stationary sources of air pollutants. As required by the federal Clean Air Act, 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. 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 for 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.

The NAAQS are defined as the maximum acceptable concentration that may be reached but not exceeded more than once per year. California has adopted more stringent ambient air quality

standards for some of the criteria air pollutants. Table 3.4-2 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 CAAQS for sulfates, hydrogen sulfide, and vinyl chloride.

As shown in Table 3.4-2, the Air Basin currently is classified as non-attainment for the 1-hour state ozone standard as well as for the federal and state 8-hour ozone standards. The Air Basin also is designated as non-attainment for the state annual average and national 24-hour $PM_{2.5}$ standards. Additionally, the Air Basin is classified as non-attainment for the state 24-hour and annual average PM_{10} standard. The Air Basin is unclassified or classified as attainment for all other pollutants standards (SJVAPCD 2023a).

Toxic Air Contaminants

The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Assembly Bill [AB] 2588) seeks to identify and evaluate risk from air toxics sources but does not directly regulate air toxics emissions. 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 Toxic Program and is responsible for prioritizing facilities that emit air toxics, reviewing health risk assessments, and implementing risk reduction procedures. 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).

Valley Fever

On October 11, 2019, the adoption of AB 203 added Section 6709 to the Labor Code, relating to occupational safety and health. This bill requires construction employers whose employees engage in specified work activities or vehicle operation in counties where Valley Fever is highly endemic, such as Fresno County, to provide effective awareness training on Valley Fever to all employees annually and before an employee begins work that is reasonably anticipated to cause substantial dust disturbance. The bill requires the training to cover specific topics and authorizes the training to be included in the employer's injury and illness prevention program training or as a standalone training program. The training must include the following topics:

- What Valley Fever is and how it is contracted.
- High risk areas and types of work and environmental conditions during which the risk of contracting Valley Fever is highest.
- Personal risk factors that may create a higher risk for some individuals.
- Personal and environmental exposure prevention methods.
- The importance of early detection, diagnosis, and treatment to help prevent the disease from progressing.
- How to recognize common signs and symptoms of Valley Fever.

- The importance of reporting symptoms to the employer and seeking medical attention from a physician and surgeon for appropriate diagnosis and treatment.
- Common treatment and prognosis for Valley Fever.

Regulations promulgated by the California Occupational Safety and Health Administration (Cal OSHA) also impose legal responsibilities designed to protect workers, including from risks associated with exposure to Valley Fever, including:

- A duty on employers to report work-connected fatalities and serious injuries (14 Cal. Code Regs. Section 342).
- A requirement that Injury and Illness Prevention Programs include a system for ensuring that employees comply with safe and healthy work practices (14 Cal. Code Regs. Section 3203).
- Control of harmful exposures to employees, including engineering controls, administrative controls, and control by respiratory protective equipment (14 Cal. Code Regs. Section 5141).
- Additional respiratory protection requirements (14 Cal. Code Regs. Section 5144).
- An employer duty to record work-related fatalities, injuries and illnesses (14 Cal. Code Regs. Section 14300).

Federal

The USEPA is responsible for implementing the programs established under the federal Clean Air Act, such as developing and reviewing the NAAQS and judging the adequacy of State Implementation Plans (SIPs). The USEPA 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 Clean Air Act (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 to achieve all standards by the deadlines specified in the act. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an ample margin of safety) to which the public can be exposed without adverse health effects. They are designed in consideration of those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards without observing adverse health effects. The current attainment status for the Air Basin, with respect to NAAQS, is summarized above and identified in Table 3.4-2.

The USEPA requires a Prevention of Significant Deterioration (PSD) review for new major sources or modifications at existing major sources for pollutants where the area the source is located is in attainment or unclassifiable with respect to the NAAQS. Under the Clean Air Act, a major source is a stationary source that emits more than 10 tons or more per year of a single hazardous air pollutant (HAP) or 25 or more tons per year of all HAPs. The Project would not be considered a major stationary source; however, this discussion is applicable to the Project because

the SJVAPCD uses PSD terminology in its recommendations for CEQA analyses. Specifically, the SJVAPCD recommends the use of PSD Significant Impact Levels (SILs) for ambient air quality analyses conducted for CEQA reviews. In the context of PSD reviews, the SIL is a *de minimis* threshold applied to individual facilities that apply for a permit to emit a regulated pollutant in an area that meets the NAAQS. CARB and USEPA must determine if emissions from such a facility would cause the air quality to worsen. The SIL is a measure of whether a source may cause or contribute to a violation of PSD increment or the NAAQS, i.e., a significant deterioration of air quality.

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 are primarily 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 Clean Air Act and California Clean Air Act.

Although the federal Clean Air Act 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 the NAAQS were established, and because of the unique meteorological problems in California, there is considerable diversity between most of the State and national ambient air quality standards, as shown in Table 3.4-2. Most of the CAAQS are at least as protective as the NAAQS and some are more stringent. In 1988, California passed the California Clean Air Act (Health and Safety Code Section 39600 et seq.), which, like its federal counterpart, requires the designation of areas as attainment or non-attainment, but based these designations on CAAQS rather than the NAAQS. The current attainment status for the Air Basin, with respect to CAAQS, is summarized above and identified in Table 3.4-2.

Local

San Joaquin Valley Air Pollution Control District

The Project would be 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 administers permits governing stationary sources. In addition to administering permits, SJVAPCD enforces the following rules, regulations, and plans that would apply to the Project.

Air Quality Management Plans

As required by the federal and California Clean Air Acts, air basins or portions thereof have been classified as either "attainment" or "non-attainment" for each criteria air pollutant, based on whether the standards have been achieved. Jurisdictions of non-attainment areas also must prepare an air quality management plan that includes strategies for achieving attainment. The SJVAPCD has approved air quality management plans demonstrating how the Air Basin will reach attainment with the federal 1-hour and 8-hour ozone, PM_{10}, and $PM_{2.5}$ standards.

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 1-hour ozone standard by November 15, 2010. The 1-hour ozone standard was subsequently revoked by the USEPA in June of 2005. The *2013 Plan for the Revoked 1-Hour Ozone Standard* was approved by the Governing Board on September 19, 2013 (SJVAPCD 2013) to attain the 1-hour ozone standard by 2017. On July 18, 2016, the USEPA published in the Federal Register the final action to determine that the Air Basin has attained the 1-hour ozone standard. On June 15, 2023, SJVAPCD adopted the *2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard* in order to terminate anti-backsliding provisions for the revoked 1-hour ozone standard. The 2023 plan includes a demonstration that would ensure the Air Basin remains in attainment of the revoked 1-hour ozone standard through 2036, a request to redesignate the Air Basin to attainment for the revoked 1-hour ozone standard, and requests termination of all anti-backsliding obligations (SJVAPCD 2023b).

SJVAPCD adopted the *2016 Plan for the 2008 8-Hour Ozone Standard* in June 2016. This plan satisfies Federal Clean Air Act requirements and ensures expeditious attainment of the 75 parts per billion 8-hour ozone standard. The intent of the plan is to reduce NO_x emissions by over 60 percent between 2012 and 2031, and to bring the Air Basin into attainment of the USEPA's 2008 8-hour ozone standard as expeditiously as practicable, but no later than December 31, 2031 (SJVAPCD 2016a).

On May 19, 2020, the Governing Board adopted the *2020 Reasonably Available Control Technology Demonstration for the 2015 8-Hour Ozone Standard* (SJVAPCD 2020). This standard includes a demonstration that the SJVAPCD rules implement Reasonably Available Control Technology (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. In December 2022, the SJVAPCD adopted the *2022 Plan for the 2015 8-Hour Ozone Standard*. This plan builds upon decades of developing and implementing effective air pollution control strategies. It ensures expeditious attainment of the 70 parts per billion 8-hour ozone standard and intends to reduce NO_x emissions by 72 percent by 2037 (SJVAPCD 2022).

Following several precedent-setting contingency actions, in April 2024, SJVAPCD and CARB published the *Ozone Contingency Measure SIP Revision* to revise the contingency measure commitments for the 2008 and 2015 8-hour ozone federal standards. The evaluation was transmitted through CARB to USEPA for approval and incorporation into the California SIP and would replace relevant portions of the *2016 Plan for the 2008 8-Hour Ozone Standard, 2018 SIP Update, and 2022 Plan for the 2015 8-Hour Ozone Standard* (SJVAPCD 2024a).

Particulate Matter Attainment Plans

Effective November 12, 2008, USEPA re-designated the Air Basin as an attainment area with respect to the PM_{10} NAAQS and approved the *2007 PM_{10} Maintenance Plan* (USEPA 2008). In April 2008, the SJVAPCD Board adopted the *2008 $PM_{2.5}$ Plan* and subsequently approved amendments on June 17, 2010 (SJVAPCD 2008). This plan was designed to address USEPA's annual $PM_{2.5}$ standard of 15 $\mu g/m^3$, which was established in 1997. In April 2015, the SJVAPCD

Board adopted the *2015 Plan for the 1997 $PM_{2.5}$ Standard* that addresses the USEPA's annual and 24-hour $PM_{2.5}$ standards established in 1997 after the Air Basin experienced higher $PM_{2.5}$ levels in winter of 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 2015b).

SJVAPCD adopted the *2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard* on September 15, 2016. This plan addresses the updated USEPA federal 2012 annual $PM_{2.5}$ standard of 12 $\mu g/m^3$, established in 2013, and includes an attainment impracticability demonstration and request for reclassification of the Air Basin from Moderate non-attainment to Serious non-attainment (SJVAPCD 2016b). USEPA approved the plan and reclassified the Air Basin to Serious nonattainment, effective December 2021.

The *2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards* was adopted on November 15, 2018, and utilizes extensive science and research, state of the art air quality modeling for the time, and the best available information in developing a strategy to attain the federal health-based 1997, 2006, and 2012 standards for $PM_{2.5}$. The Plan consists of a combination of innovative regulatory and non-regulatory measures including aggressive incentive-based control measures that achieve the emissions reductions needed to bring the area into attainment (SJVAPCD 2018).

SJVAPCD adopted the *Initial SIP Requirements for the 2012 Annual $PM_{2.5}$ Standard* on October 19, 2023, to fulfill the first portion of SIP elements required by the Clean Air Act for Serious $PM_{2.5}$ nonattainment areas, including an updated emissions inventory, precursor demonstration, and the demonstration that best available control measure requirements continue to be satisfied in the Air Basin. Then, on June 20, 2024, SJVAPCD adopted the *2024 Plan for the 2012 Annual $PM_{2.5}$ Standard* to fulfill the remaining Clean Air Act requirements, including the final modeling analysis, attainment strategy and emission reduction commitments, reasonable further progress/ quantitative milestones, and contingency measures. This plan demonstrates expeditious attainment of the 2012 $PM_{2.5}$ standard by 2030 (SJVAPCD 2024b).

Applicable Rules

Rule 2201 (Visibility)

Rule 2201 requires review of new and modified stationary sources of air pollution, such as the Project's proposed emergency generators, and provides mechanisms including emission trade-offs that Authorities to Construct permit sources may be granted, without interfering with the attainment or maintenance of ambient air quality standards. No net increase in emissions is permitted above specified thresholds from new and modified stationary sources of all non-attainment pollutants and their precursors.

Rule 4102 (Nuisance)

Rule 4102 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)

Rule 4601 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)

Rule 4641 is intended to limit 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.

Regulation VIII and Rule 8021 (Fugitive PM_{10} Prohibitions)

Regulation VIII contains rules developed pursuant to USEPA guidance for serious PM_{10} non-attainment areas. Rules included under this regulation limit fugitive dust PM_{10} emissions from the following sources: construction, demolition, excavation, extraction, and other earth moving activities, bulk materials handling, carryout and track-out, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. **Table 3.4-3** contains requirements for projects subject to SJVAPCD Rule 8021; **Table 3.4-4** contains additional control measures that the Applicant would be required to implement during Project construction activities pursuant to Measure No. 5.2 of Rule 8021, *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities*.

Rule 9510 (Indirect Source Review)

Rule 9510 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).

3.4.1.4 Fresno Council of Governments

The Fresno Council of Governments (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 serves as the federally designated metropolitan planning organization for Fresno County. With respect to air quality planning and other regional issues, FCOG has prepared the 2022 Regional Transportation Plan/Sustainable Communities Strategy (2022 RTP/SCS) for the region (FCOG 2022). The 2022 RTP/SCS addresses greenhouse gas emissions reductions and other air emissions related to transportation, with the goal of preparing for future growth in a sustainable manner through the year 2046. It contains a variety of different elements or chapters with each element augmented by additional documentation. Policies within the 2022 RTP/SCS work to protect the region's air quality and build on the short-range program's successes, on both federal and California air quality policies and mandates, and on available funding. Long-term strategies are those that are often aimed at changing attitudes and behavior toward new and alternate transportation systems and fuels, alternative means of commuting to work, and land-use changes over time.

TABLE 3.4-3
SJVAPCD RULE 8021 MEASURES OTHER THAN ADMINISTRATIVE AND DISTRICT NOTIFICATION REQUIREMENTS APPLICABLE TO THE PROJECT

No.	Measure
5.2	A person shall control the fugitive dust emissions to meet the requirements in [SJVAPCD] Table 8021-1 [shown below as Table 3.4-4].
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 visible dust emissions 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 prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 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 Air Pollution Control Officer has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the Air Pollution Control Officer 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 Air Pollution Control Officer 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.
6.3.6	A Dust Control Plan shall contain all of the following information: 6.3.6.1: Name(s), address(es), and phone number(s) of person(s) and owner(s)/operator(s) responsible for the preparation, submittal, and implementation of the Dust Control Plan and responsible for the dust generating operation and the application of dust control measures. 6.3.6.2: A plot plan which shows the type and location of each project. 6.3.6.3: The total area of land surface to be disturbed, daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site. 6.3.6.4: The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site. 6.3.6.5: The actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads; entrances and exits where carryout/trackout may occur; and traffic areas. 6.3.6.6: Dust suppressants to be applied, including: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application. 6.3.6.7: Specific surface treatment(s) and/or control measures utilized to control material carryout, trackout, and sedimentation where unpaved and/or access points join paved public access roads. 6.3.6.8: At least one key individual representing the owner/operator or any person who prepares a Dust Control Plan must complete a Dust Control Training Class conducted by the District. The District will conduct Dust Control Training Classes on an as needed basis.

SOURCE: SJVAPCD 2004

TABLE 3.4-4
CONTROL MEASURE OPTIONS FOR CONSTRUCTION, EXCAVATION, EXTRACTION, AND OTHER EARTH MOVING ACTIVITIES

A	**Pre-Activity**
A1	Pre-water site sufficient to limit visible dust emissions to 20 percent opacity.
A2	Phase work to reduce the amount of disturbed surface area at any one time.
B	**During Active Operations**
B1	Apply water or chemical/organic stabilizers/suppressants sufficient to limit visible dust emissions to 20 percent opacity; or
B2	Construct and maintain wind barriers sufficient to limit visible dust emissions to 20 percent opacity. If using wind barriers, control measure B1 above shall also be implemented.
B3	Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/ equipment traffic areas sufficient to limit visible dust emissions to 20 percent opacity and meet the conditions of a stabilized unpaved road surface.
C	**Temporary Stabilization During Periods of Inactivity**
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.

SOURCE: SJVAPCD 2004: Table 8021-1

Fresno County

Consistency of the Project with the Fresno County General Plan is analyzed in detail in Appendix I1, *Consistency with Fresno County General Plan*. The following air quality goal and policies are aimed at reducing air emissions from development projects such as the Project and are especially relevant to this analysis (Fresno County 2024):

> **Goal OS-G:** To improve air quality and minimize the adverse effects of air quality pollution in Fresno County.
>
> > ***Policy OS-G.2: Air Quality Impact Assessment.*** 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: Valley Fever Mitigation.*** The County shall continue to promote public awareness of Valley Fever risks relating to ground disturbing activities through the provision of educational materials, webpages and resource contact information. For projects involving ground disturbance on unpaved areas left undisturbed for 6 months or more, the County shall require developers to provide project-specific Valley Fever training and training materials.
> >
> > ***Policy OS-G.14: Fugitive Dust Control Measures.*** 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 [now known as SJVAPCD] 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.15: Access Road Standards. 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.

Policy OS-G.16: Roadway Dust Control. The County shall continue to work to reduce PM_{10} and $PM_{2.5}$ emissions from County maintained roads by considering shoulder treatments for dust control as part of road reconstruction projects.

3.4.2 Significance Criteria

The Project would result in significant impacts on air quality 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 non-attainment under an applicable federal or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations;

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

In addition to the air quality criteria above from Appendix G of the CEQA Guidelines, SJVAPCD's *Guidance for Assessing and Mitigating Air Quality* includes one additional criterion. Consistent with SJVAPCD's Guidance, the Project would be considered to result in a significant impact on air quality if it would:

e) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

To evaluate significance, the *Guidance for Assessing and Mitigating Air Quality Impacts* has established emissions-based thresholds of significance for criteria air pollutants (SJVAPCD 2015a), which are shown in **Table 3.4-5**. The SJVAPCD recommends that lead agencies evaluate the significance of construction and operational impacts separately and provides separate significance thresholds for construction emissions and emissions from operational permitted and non-permitted equipment and activities. The operational thresholds of significance are relative to calendar-year, although construction emissions are assessed on a rolling 12-month period.

In addition to the annual mass emissions thresholds described in Table 3.4-5, the SJVAPCD has also established screening criteria to determine if a project would result in a CO hotspot at affected roadway intersections (SJVAPCD 2015a). If neither of the following criteria are met at any of the intersections affected by the Project, then the Project would result in no potential to create a violation of the CO standard:

- 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 LOS F.
- 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.

TABLE 3.4-5
SJVAPCD AIR QUALITY THRESHOLDS OF SIGNIFICANCE – CRITERIA AIR POLLUTANTS

Pollutant	Construction Emissions (tons per year)	Operational Emissions (tons per year)	
		Permitted Equipment & Activities	Non-Permitted Equipment & Activities
CO	100	100	100
NO_x	10	10	10
ROG	10	10	10
SO_x	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

NOTES: CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; ROG = reactive organic gas; SO_x = sulfur oxides.
SOURCE: SJVAPCD 2015a

The SJVAPCD recommends that an AAQA be performed when on-site emissions of any criteria pollutant would equal or exceed 100 pounds per day. If emissions of one criteria pollutant exceeds the threshold, then all criteria pollutants are to be modeled. In the AAQA, air pollutant concentrations are determined by conducting air dispersion modeling, adding the resulting concentrations to ambient background levels, and comparing to the applicable ambient air quality standard. The Project would be considered to have a significant impact if its emissions are predicted to cause or contribute to a violation of an ambient air quality standard by exceeding any CAAQS or NAAQS. If an exceedance of the CAAQS or NAAQS is predicted, modeled concentrations may be compared to SILs established by the USEPA for its PSD program to assess whether the Project's emissions would contribute significantly to an existing violation of the CAAQS or NAAQS.

The SJVAPCD has established thresholds of significance for combined TAC emissions from the operations of both permitted and non-permitted sources (SJVAPCD 2015a). If the Project would have the potential to expose the public to TACs with risks more than the following thresholds, it would be considered to have a significant air quality impact:

- Probability of contracting cancer for the maximally exposed individual equals or exceeds 20 in 1 million people.
- Hazard index for acute and chronic non-carcinogenic TACs equals or exceeds 1 for the maximally exposed individual.

As described in the *Guidance for Assessing and Mitigating Air Quality Impacts*, due to the subjective nature of odor impacts, there are no quantitative thresholds to determine if potential odors would have a significant impact (SJVAPCD 2015a). Projects must be assessed for odor impacts on a case-by-case basis for the following two situations:

- **Odor generators:** Projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate.
- **Receivers:** Residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

3.4.3 Direct and Indirect Effects

3.4.3.1 Methodology

To determine the significance of potential impacts on air quality, Project-related construction, operation and maintenance (O&M), and decommissioning and site restoration emissions were estimated and then compared to significance thresholds recommended in the SJVAPCD's *Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a). Detailed emission estimates and calculations for the construction and O&M of the Project are included in the *Air Quality and Greenhouse Gas Emissions Analysis Technical Report* prepared by the Project Applicant (see Appendix D1).

The Project area is classified as a non-attainment area for the 1-hour state ozone standard as well as for the federal and state 8-hour ozone standards. The Air Basin also is designated as non-attainment for the state annual average and national 24-hour $PM_{2.5}$ standards. Additionally, the Air Basin is classified as non-attainment for the state 24-hour and annual average PM_{10} standard. Therefore, the SJVAPCD has adopted CEQA thresholds of significance for ozone precursors (i.e., ROG and NO_x), PM_{10}, and $PM_{2.5}$ for both short-term construction and long-term project operations as identified in Table 3.4-5, above. The SJVAPCD has also adopted CEQA thresholds of significance for CO and SOx even though the Air Basin is in attainment and/or unclassified for the ambient air quality standards for these pollutants. The SJVAPCD has determined that an exceedance of these thresholds indicates that a project would cumulatively jeopardize attainment of ambient air quality standards. An exceedance of the standards would result in a significant adverse cumulative impact on air quality.

Construction

The California Emissions Estimator Model (CalEEMod) Version 2022.1.1.29 was used to estimate potential Project-generated criteria pollutant and GHG emissions during construction. CalEEMod incorporates EMFAC and OFFROAD emission factors.

The Project may be constructed over 40 months depending on the constructing time for the BESS portion of the Project, but construction emissions were modeled to occur over a period of 18 months, starting in 2026. The modeling assumes the greatest possible overlap of the components and associated construction activities for a conservative analysis that considers maximum emissions that could be generated during any one rolling 12-month period. Construction scenario assumptions, including phasing, equipment, and vehicle trips, were based on information provided by the Applicant. The details of the assumptions and calculations used to determine Project construction emissions are included in Appendix D.

Operation

Operational emissions including area, energy, and mobile source emissions also were estimated using the CalEEMod version 2022.1.1.29. Area sources include architectural coatings, consumer products, and landscape maintenance equipment. These emissions were calculated based on the O&M and control building square footages and default model assumptions for reapplication rates. Energy consumption would include electricity usage; however, because electricity used for the

Project would be from PG&E's regional power grid and so could be generated at any number and type of power plants within PG&E's service area and beyond, including outside of the Air Basin, criteria pollutant emissions associated with Project electricity usage are not quantified as part of this analysis. Mobile sources would include motor vehicles (e.g., pickup trucks or light duty trucks) traveling to and from the Project site for maintenance visits. Additional details of assumptions and calculations used to determine Project-related operational emissions are included in Appendix D.

Decommissioning

Once the Project has reached the end of its lifetime, Project infrastructure would be decommissioned and the site restored in accordance with the provisions of a reclamation plan (see Appendix B2, which includes a preliminary reclamation plan). Upon decommissioning, all equipment and on-site Project structures would be removed, and these sites would be returned to a condition comparable to its pre-Project state. Like the construction phase, the decommissioning phase would be temporary. Decommissioning activities would generate air pollutants from on-site sources (e.g., off-road equipment and soil disturbance) and off-site sources (e.g., on-road haul trucks, vendor trucks, and worker vehicle trips). Emissions from the eventual decommissioning would be less than those from Project construction. To be conservative, the emissions from decommissioning were assumed to be the same as those from construction. This assumption is considered conservative because decommissioning would result in fewer emissions than construction. Once decommissioning activities are completed, all Project-related on-site activity and emissions would cease at the Project site.

Ambient Air Quality Analysis

According to the *Guidance for Assessing and Mitigating Air Quality Impacts*, an AAQA should be prepared if the emissions of a pollutant from on-site construction or on-site operation exceeds 100 pounds per day. As detailed under Impact 3.4-2 below, the Project's maximum day on-site emissions of CO would exceed 100 pounds per day during construction. Therefore, an AAQA was conducted to determine if Project construction emissions would cause or contribute to a violation of the ambient air quality standard by exceeding any of the CAAQS or NAAQS. No AAQA was prepared for operational emissions because operational emissions were estimated to be well below the modeling threshold of 100 pounds per day.

Air dispersion modeling for the AAQA was performed using the American Meteorological Society/EPA Regulatory Model (AERMOD). On-site construction and decommissioning emissions concentrations of criteria pollutants (CO, NO_2, PM_{10}, $PM_{2.5}$, and SO_2) were modeled using CalEEMod estimated daily on-site Project mass emissions. The modeled concentrations were added to background concentrations and results were compared to CAAQS and NAAQS and SILs. Details of the modeling parameters used for the AAQS are included in Appendix D1.

The AAQA was conducted per the *Policy for District Rule 2201 AAQA Modeling* (SJVAPCD 2014a), which recommends preparation of an AAQA for development projects, such as residential, commercial, industrial, or transportation projects, that would result in an increase of 100 pounds per day for any pollutant during construction or operation. The AAQA was conducted using the SJVAPCD's recommended progressive three-level approach with each level

consisting of two steps. The assessment begins with Level 1, and only proceeds to the next level if necessary.

- **Level 1 AAQA:** All required criteria pollutants and averaging periods are modeled with a normalized emission rate (1 g/s) for each source. For each pollutant/averaging period, the maximum predicted concentration is then calculated by multiplying the result by the emission rates generated from CalEEMod.
  - *Step 1* – The maximum predicted concentrations are summed with their corresponding background concentrations and compared to their respective ambient air quality standard(s) (i.e., NAAQS and CAAQS). For each pollutant and averaging period, if the maximum predicted concentrations do not exceed ambient air quality standards, then the analysis is complete, and no further action is required. If the maximum predicted concentration exceeds a CAAQS or NAAQS, then the analysis proceeds to Step 2 for the specific pollutants and corresponding averaging periods.
  - *Step 2* – If the maximum predicted concentration exceeds a CAAQS or NAAQS, then it is compared to a corresponding SIL. If the maximum predicted concentration does not exceed the corresponding SIL, then the analysis is complete for that pollutant and averaging period and no further action is required. If the maximum predicted concentration exceeds the SIL, then the analysis proceeds to Level 2 AAQA.
- **Level 2 AAQA:** Each pollutant is modeled separately using pollutant-specific emission rates (generated in CalEEMod) rather than normalized emission rates. For each pollutant/averaging period, the maximum predicted concentration is selected for evaluation. For NO_2 modeling, appropriate NO_x-to-NO_2 conversion methods may be used. Additionally, predicted NO_2 concentrations are based on the 8th highest value.
  - *Step 1* – The maximum predicted concentrations are summed with their corresponding background concentrations and compared to their respective CAAQS and NAAQS. If the maximum predicted concentrations do not exceed the corresponding standard, then no further evaluation is required. If the maximum predicted concentration exceeds a standard, then proceed to Step 2 for the specific pollutants and corresponding averaging periods.
  - *Step 2* – If the maximum predicted concentration exceeds the standard in Step 1, then compare the result with the corresponding SIL. If the maximum predicted concentration does not exceed a SIL, then no further evaluation is needed. If the maximum predicted concentration exceeds the corresponding SIL, then proceed to Level 3 AAQA.
- **Level 3 AAQA:** The approach is similar to Level 2, except that annual ozone and NO_2 background data may be used.

Health Impacts

In *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502 (known as the *Friant Ranch* case), the California Supreme Court held that CEQA requires that a connection be drawn between potential project emissions and human health impacts. The Court found that while there will be some scientific limits to the analytical tools available to draw and quantify these connections, an EIR "must adequately explain what the agency does know and why, given existing scientific constraints, it cannot translate potential health impacts further." The Court faulted the EIR in that case for "fail[ing] to indicate the concentrations at which [certain] pollutants would trigger identified symptoms." The Court concluded that "the public would have no idea of the health

consequences that result when more pollutants are added to a nonattainment basin." The Court found that even if it were impossible to do more, the Friant Ranch EIR would have been found insufficient "because it failed to explain why it was not feasible to provide an analysis that connected the air quality effects to human health consequences."

The SJVAPCD significance thresholds described above were set at emissions levels tied to the region's attainment status relative to the national and state ambient air quality standards designed to protect public health. They are emissions levels at which stationary pollution sources permitted by the SJVAPCD must offset their emissions and CEQA projects must use feasible mitigations; they are not intended to be indicative of any localized human health impact that a project may have. Therefore, a project-caused exceedance of the mass regional emissions threshold (e.g., pounds per day or tons per year NO_x thresholds) prior to mitigation from construction-related activities could indicate that the project could cause or contribute to the exposure of sensitive receptors to ground-level concentrations greater than health-protective levels.

Health Risk Assessment

A health risk assessment (HRA) was conducted for Project construction emissions following the methodologies prescribed in the California Environmental Protection Agency/Office of Environmental Health Hazard Assessment's (OEHHA's) *Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015). It is included in Appendix D1.

The HRA incorporated emissions estimates generated by CalEEMod and the spreadsheet model and dispersion modeling input parameters were the same as those used for the AAQA. Discrete receptors were used to represent residences closest to the Project site. For risk assessment purposes, PM_{10} in diesel exhaust is considered DPM, originating mainly from off-road equipment. The construction HRA modeling evaluated DPM from diesel-fueled off-road construction equipment and trucks and on-site vehicles.

To estimate health risks, maximum PM_{10} concentration from the Project's on-site construction activities were modeled using AERMOD and were then used as input into HARP 2. HARP 2 is a software suite used to assist with the requirements of the Air Toxics "Hot Spots" Program (AB 2588) and incorporates the health risk parameters of the latest version of OEHHA Air Toxics Hot Spot Risk Assessment guidelines (OEHHA 2015). The assumption and calculation details used to determine Project-related construction health risks are included in Appendix D1.

3.4.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would conflict with or obstruct implementation of the applicable air quality plan.

Impact 3.4-1: Criteria pollutant emissions generated by the Heartland Solar Project could conflict with the SJVAPCD's air quality plans. (*Less-than-Significant Impact*)

The Heartland Solar Project's proposed construction, operation and maintenance, and decommissioning and site restoration activities would result in emissions of criteria pollutants and ozone precursors such as ROG and NO_x as well as particulate matter, pollutants for which the Air Basin is designated as non-attainment. The SJVAPCD has prepared several air quality attainment plans to achieve ozone and particulate matter standards, the most recent of which include the *2020 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan*, *2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard*, *Ozone Contingency Measure SIP Revision, Initial SIP Requirements for the 2012 Annual $PM_{2.5}$ Standard, and the 2024 Plan for the 2012 Annual $PM_{2.5}$ Standard*. The Air Basin is in attainment for CO, SO_2, and lead, so there are no air quality plans for those pollutants.

The SJVAPCD has determined that projects that generate emissions below its CEQA thresholds of significance for criteria pollutants and ozone precursors would not conflict or obstruct implementation of the applicable SJVAPCD air quality plans (SJVAPCD 2015a). A project would not conflict or obstruct a SJVAPCD air quality plan if it complies with all applicable SJVAPCD rules and regulations, complies with all applicable proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan) (SJVAPCD 2015a).

Construction

The Heartland Solar Project would be required to comply with applicable SJVAPCD rules and regulations, such as Regulation VIII (Fugitive PM_{10} Prohibitions) and Rule 9510 (Indirect Source Review), which are summarized in Section 3.4.1.3, *Regulatory Setting*. The air pollutant emissions associated with construction equipment activities and haul truck, vendor truck, and worker vehicle trips that would be generated during construction would be short-term and would cease to be generated after construction is completed. Additional equipment activities and trips would occur during decommissioning.

As discussed under Impact 3.4-2, below, maximum annual emissions generated during Project construction would not exceed the SJVAPCD's annual thresholds and would therefore result in a less-than-significant impact associated with potential conflicts or obstruction with any applicable air quality plans.

Operation and Maintenance

The Heartland Solar Project would not conflict with existing land use plans. The 2022 RTP/SCS population and housing projections include population growth of 133,150 persons in 44,670 households from 2019 to 2035 (FCOG 2022). Implementation of the Project would not exceed

the demographic growth forecasts in the 2022 RTP/SCS. In addition, the Project would result in a minor increase in long-term trips that would have a negligible increase in overall vehicle miles traveled in the area. During the longer-term operational phase, the Project would have routine inspection and maintenance activities that would result in a net increase in emissions although, as discussed under criterion b), the increase in emissions would not exceed any significance threshold or violate any SJVAPCD rule or regulation. Based on these considerations, the Project's operation and maintenance activities would not conflict with or obstruct implementation of the SJVAPCD's air quality plans, and the associated impact would be less than significant.

Decommissioning

Additional haul trucks, vendor trucks, and worker vehicle trips would occur during decommissioning of the Heartland Solar Project and restoration of the project site. Much like construction, decommissioning activities would be required to comply with applicable SJVAPCD rules and regulations, such as Regulation VIII (Fugitive PM_{10} Prohibitions) and Rule 9510 (Indirect Source Review). Trips that would be generated would be short-term and cease after decommissioning activities are complete. Therefore, the Project's decommissioning emissions would not conflict with or obstruct implementation of the applicable air quality plan and the impact would be less than significant.

Mitigation: None required.

Criterion b) Whether the Project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Criterion e) Whether the Project would violate any air quality standard or contribute substantially to an existing or projected air quality violation (SJVAPCD threshold).

Impact 3.4-2: The Heartland Solar Project would result in net increases of criteria pollutants for which the Project region is non-attainment under federal and/or state ambient air quality standards. (*Less-than-Significant Impact*)

Construction, operation and maintenance, and decommissioning activities associated with the Project would generate emissions of criteria air pollutants and ozone precursors.

Construction

The Heartland Solar Project construction was modeled to begin in 2026 and last over a period of 18 months. Emissions modeling assumes schedule overlap of several phases, including construction of the solar facility, commissioning of the solar facility, and construction of the battery energy storage system (BESS). However, the BESS portion of the Project may be constructed after the solar portion of the Project, which would result in an approximately 40-month construction duration. Project construction would consist of grading and site preparation followed by above-ground facility construction, including component assembly and electrical interconnection of the solar facility and battery energy storage facility.

Grubbing and grading would occur at the Project site to achieve the required surface conditions. Water for dust control and other construction needs would come from on-site wells, groundwater purchased from neighboring landowners, or through a municipal and industrial water agreement. The Project would comply with SJVAPCD Regulation VIII and Rule 8021 to control fugitive dust emissions generated during grading activities as an independent obligation of the Project enforced by the SJVAPCD. SJVAPCD Rule 8021 measures that would apply to the Project are listed in Table 3.4-3.

Maximum annual estimated Project construction emissions are summarized in **Table 3.4-6** and compared to the SJVAPCD's annual construction thresholds. As shown in Table 3.4-6, maximum annual Project construction emissions of ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ would not exceed the applicable significance thresholds.

TABLE 3.4-6
MAXIMUM ANNUAL CONSTRUCTION EMISSIONS

Max. Rolling 12 Month Period	Annual Emissions (tons per year)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Project	0.44	3.97	16.0	0.02	2.49	0.60
SJVAPCD Threshold	10	10	100	27	15	15
Threshold Exceeded?	No	No	No	No	No	No

NOTES: CO = carbon monoxide; NO_x = nitrogen oxides; ROG = reactive organic gas; SO_x = sulfur oxides; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District

SOURCE: Based on Table 9 of Appendix D1

The Heartland Solar Project also would be required to comply with SJVAPCD Rule 9510 (ISR Compliance), which requires that exhaust emissions from construction equipment greater than 50 horsepower must be reduced to 20 percent below the statewide average NO_x emissions and 45 percent below statewide average PM_{10} exhaust emissions. The Project is expected to comply with these independently enforceable requirements through the use of its proposed construction equipment, which include Tier 3 equipment or better for excavators, graders, and tractors/loaders/backhoes, and Tier 4 Final equipment or better for aerial lifts, air compressors, bore/drill rigs, cement and mortar mixers, concrete/industrial saws, cranes, forklifts, generator sets, pavers, rollers, rubber-tired dozers, rubber-tired loaders, skid steer loaders, trenchers, and welders. Therefore, implementation of SJVAPCD Rule 9510 would be expected to result in lower emissions beyond those shown in Table 3.4-6.

The SJVAPCD also recommends the consideration of maximum on-site daily emissions for the evaluation of Project impacts on localized ambient air quality. The SJVAPCD recommends that an AAQA be performed for criteria pollutants when maximum total on-site emission estimates of any criteria pollutant or criteria pollutant precursor that would result from Project construction or operational activities exceed the 100 pounds per day screening level. Maximum on-site daily emissions for the Project have not been estimated; however, **Table 3.4-7** presents the estimated average daily emissions that would be associated with construction of the Project.

TABLE 3.4-7
AVERAGE DAILY CONSTRUCTION EMISSIONS

	Maximum Daily Emissions (pounds per day)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	8.29	79.29	285.66	0.26	49.29	12.13
SJVAPCD Screening Threshold	100	100	100	100	100	100
Threshold Exceeded?	No	No	Yes	No	No	No

NOTES: CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; ROG = reactive organic gas; SJVAPCD = San Joaquin Valley Air Pollution Control District; SO_x = sulfur oxides.
SO_x emissions were not estimated but are assumed to be well below the screening threshold.
SOURCE: Based on Appendices D1 and D2.

As shown in Table 3.4-7, estimated average daily emissions of CO exceed the 100 pounds per day screening threshold. Since maximum day emissions tend to exceed average daily emissions, it can be assumed that at least maximum day emissions of CO would exceed the screening threshold. Therefore, an AAQA was prepared for the Project. A summary of the construction Level 1 AAQA is provided in **Table 3.4-8**. Further details on the AAQA can be found in Appendix D1. The Project concentrations shown in Table 3.4-8 are based on mass emission rates greater than those presented and Table 3.4-7, so they are considered conservative for this analysis.

TABLE 3.4-8
CONSTRUCTION LEVEL 1 AAQA

Input Parameter	Applicable Standard	Project Area Maximum Background Concentration (Years 2021-2023)		Project Contribution ($\mu g/m^3$)	Cumulative Concentration ($\mu g/m^3$)	AAQS Threshold ($\mu g/m^3$)	Step 1 Significance	SIL ($\mu g/m^3$)	Step 2 Significance
		ppmv	$\mu g/m^3$						
1-hour CO	State	2.2	2,520	74.31	2,595	22,900	PASS	2000	Step 1
	Federal	2.2	2,520	74.31	2,595	40,100	PASS	2000	Step 1
8-hour CO	State	1.8	2,062	48.42	2,110	10,300	PASS	500	Step 1
	Federal	1.8	2,062	48.42	2,110	10,300	PASS	500	Step 1
1-hour NO_2	State	0.065	122	24.58	147	339	PASS	7.5	Step 1
	Federal	0.065	122	24.58	147	188	PASS	7.5	Step 1
Annual NO_2	State	0.012	23	2.70	25	57	PASS	1	Step 1
	Federal	0.012	23	2.70	25	100	PASS	1	Step 1
1-hour SO_2	State	0.008	21	0.11	21	655	PASS	7.5	Step 1
	Federal	0.008	21	0.11	21	196	PASS	7.8	Step 1
24-hour SO_2	State	0.003	8	0.05	8	105	PASS	5	Step 1
	Federal	0.003	8	0.05	8	367	PASS	5	Step 1
Annual SO_2	Federal	0.0004	1	0.01	1	79	PASS	1	Step 1
24-hour PM_{10}-exhaust	State	--	167	0.34	167	50	Step 2	5	PASS
	Federal	--	167	0.34	167	150	Step 2	5	PASS

Input Parameter	Applicable Standard	Project Area Maximum Background Concentration (Years 2021-2023)		Project Contribution (µg/m³)	Cumulative Concentration (µg/m³)	AAQS Threshold (µg/m³)	Step 1 Significance	SIL (µg/m³)	Step 2 Significance
		ppmv	µg/m³						
24-hour PM_{10}-fugitive	State	--	167	1.11	168	50	Step 2	10.4	PASS
	Federal	--	167	1.11	168	150	Step 2	10.4	PASS
Annual PM_{10}-exhaust	State	--	44	0.07	44	20	Step 2	1	PASS
Annual PM_{10}-fugitive	State	--	44	0.23	44	20	Step 2	2.08	PASS
24-hour $PM_{2.5}$-exhaust	Federal	--	65	0.31	66	35	Step 2	1.2	PASS
24-hour $PM_{2.5}$-fugitive	Federal	--	65	0.24	66	35	Step 2	2.5	PASS
Annual $PM_{2.5}$-exhaust	State	--	12.0	0.07	12.07	12	Step 2	0.13	PASS
	Federal	--	12.0	0.07	12.07	9	Step 2	0.13	PASS
Annual $PM_{2.5}$-fugitive	State	--	12.0	0.05	12.05	12	Step 2	0.63	PASS
	Federal	--	12.0	0.05	12.05	9	Step 2	0.63	PASS

NOTES: µg/m³ = micrograms per cubic meter; AAQS = Ambient Air Quality Standard; CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; ppm = parts per million; SO_2 = sulfur dioxide.

SOURCE: Based on Table 12 of Appendix D1

As shown in Table 3.4-8, the AAQA concluded that construction of the Project would not result in an exceedance of the ambient air quality standards or applicable SILs. Therefore, the Project would result in a less-than-significant impact.

Operation and Maintenance

Operation of the Heartland Solar Project would result in a renewable energy resource that would generate very limited direct emissions of air pollutants. On-site emissions of criteria pollutants associated with Project operation would result from solvent emissions from periodic application of paints and primers to the O&M building. Off-site emissions would be generated by employee and maintenance vehicle trips as well as from trucks carrying water to the solar facility for periodic washing the PV panels. **Table 3.4-9** presents the estimated annual operational emissions in tons per year and **Table 3.4-10** presents the estimated maximum daily operational emissions with a comparison to SJVAPCD significance thresholds. Detailed emissions calculations are provided in Appendix D.

As summarized in Table 3.4-9, maximum annual emissions associated with Project operation would not exceed the SJVAPCD significance thresholds for criteria pollutants. Table 3.4-10 shows that estimated maximum daily operational emissions would not exceed thresholds as well, thus, an AAQA would not be required. Emissions from Project operation would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Accordingly, the Project would result in a less than-significant impact associated with the increase in emissions of nonattainment pollutants. Therefore, consistent with SJVAPCD

guidance, the Project's operation and maintenance activities would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. The operational emissions impact would be less than significant.

TABLE 3.4-9
ESTIMATED ANNUAL OPERATIONAL EMISSIONS

Emission Source	Annual Emissions (tons per year)					
	ROG	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
Area - Application of Paints	0.01	0.00	0.00	0.00	0.00	0.00
Mobile Exhaust and Fugitive Dust	0.01	0.10	0.15	<0.01	0.05	0.01
Total	0.02	0.10	0.15	<0.01	0.05	0.01
SJVAPCD Threshold	10	10	100	27	15	15
Threshold Exceeded?	No	No	No	No	No	No

NOTES: CO = carbon monoxide; NO_x = nitrogen oxides; ROG = reactive organic gas; SO_x = sulfur oxides; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District

SOURCE: Appendix A, Heartland Solar Project Detailed Report CalEEMod Output Files in Appendix D1, *Air Quality and Greenhouse Gas Emissions Technical Report*

TABLE 3.4-10
MAXIMUM DAILY OPERATIONAL EMISSIONS

Emission Source	Daily Emissions (pounds per day)					
	ROG	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
Area – Application of Paints	0.07	0.00	0.00	0.00	0.00	0.00
Mobile Exhaust and Fugitive Dust	0.10	0.09	1.47	<0.01	0.37	0.09
Total	0.17	0.09	1.47	<0.01	0.37	0.09
SJVAPCD Threshold	100	100	100	100	100	100
Threshold Exceeded?	No	No	No	No	No	No

NOTES: CO = carbon monoxide; NO_x = nitrogen oxides; ROG = reactive organic gas; SO_x = sulfur oxides; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District

SOURCE: Appendix A, Heartland Solar Project Detailed Report CalEEMod Output Files in Appendix D1, *Air Quality and Greenhouse Gas Emissions Technical Report*

Decommissioning

The Air Quality Report provided in Appendix D1 assumed that the Project would be operational in 2025, however the current estimate is be operational in 2028 and to remain in operation through 2058 for an expected life of 30 years. It is possible that the life of these facilities could be extended beyond 2058 through maintenance of existing equipment or with equipment replacement and with further County review and approval. However, for this analysis, operation and maintenance activities for the Project are assumed to be terminated and the Project to be decommissioned and the site restored after 30 years.

Equipment and vehicle fleet efficiencies would be expected to increase in later years. The Project would comply with SJVAPCD Rule 8021 to control fugitive dust emissions generated during any grading activities as an independent obligation of the Project owner enforceable by the SJVAPCD. Therefore, decommissioning emissions may be lower than what is shown in Table 3.4-6.

Emissions cannot be accurately estimated because it is uncertain what the emissions profiles will be for equipment more than 30 years in the future. Since it cannot be demonstrated for certain that emissions would be less than SJVAPCD thresholds, this analysis conservatively assumes that emissions would be comparable to construction emissions. If so, none of the SJVAPCD thresholds would be exceeded, and a less-than-significant impact would result.

Mitigation: None required.

Informational Disclosure of Potential Health Effects

The primary health concern with exposure to NO_x emissions is the secondary formation of ozone. Given the complexity of ozone formation, and the state of environmental science modeling in use at this time, it is infeasible and would be speculative to determine whether, or the extent to which, a single project's precursor (i.e., NO_x and ROG) emissions would result in the formation of secondary ground-level ozone and the geographic and temporal distribution of such secondary formed emissions (SCAQMD 2014; SJVAPCD 2014b). Meteorology, the presence of sunlight, seasonal impacts, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone. Furthermore, available models today are designed to determine regional, population-wide health impacts, and cannot accurately quantify ozone-related health impacts caused by NO_x or ROG emissions from a local-level project. Therefore, it is currently infeasible to connect NO_x emissions associated with the Project to ozone-related health impacts. However, because the Project would not exceed SJVAPCD thresholds, the potential health effects associated with criteria air pollutants are considered less than significant.

Criterion c) Whether the Project would expose sensitive receptors to substantial pollutant concentrations.

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems leading to health impacts arise when the rate of pollutant emissions exceeds the rate of dispersion. As discussed earlier, some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution, as identified by CARB, include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Potential harmful airborne pollutants that could be generated by the Project are TACs and CO. Project-related ground disturbance also could expose sensitive receptors to *Coccidioides immitis* spores that could cause Valley Fever. Potential impacts relating to these pollutants are analyzed under this criterion c).

Impact 3.4-3: The Heartland Solar Project could expose sensitive receptors to substantial pollutant concentrations. (*Less-than-Significant Impact*)

Toxic Air Contaminants

Health impacts associated with TACs are generally associated with long-term exposure. Minimal emissions are expected on-site from routine maintenance, periodic PV panel washing activities, and off-site from employee and water truck trips. There are no meaningful sources of TACs associated with the operating phase of the Heartland Solar Project; therefore, operational health impacts related to TACs would be less than significant. The greatest potential for health risk impacts from exposure to TAC emissions would be during construction and decommissioning activities: specifically, emissions from heavy equipment operation and heavy-duty trucks. An HRA was prepared to assess these sources and is included in Appendix D1.

An HRA was conducted to determine the impacts of the Project from construction-related DPM, which is a TAC. As discussed in Section 3.4.1, *Methodology*, construction emissions from the CalEEMod output were modeled in AERMOD to determine the DPM concentration at the nearest resident and then worst-case exposure was estimated using OEHHA guidance (OEHHA 2015). The results of the assessment are presented in **Table 3.4-11**, *Construction-Related Health Risk Summary for the Project.*

TABLE 3.4-11
CONSTRUCTION-RELATED HEALTH RISK SUMMARY FOR THE PROJECT

Sensitive Receptor	Cancer Risk (per million)	Chronic Hazard Index (unitless)
Maximum Exposed Individual - Resident	0.4	0.0003
SJVAPCD Threshold[a]	20	1
Significant?	No	No

NOTE: SJVAPCD = San Joaquin Valley Air Pollution Control District

a. The San Joaquin Valley Air Pollution Control District's current thresholds of significance for toxic air contaminant (TAC) emissions are for operations; however, they are conservatively being applied to construction for the purposes of determining significance.

SOURCE: Table 15 of Appendix D1

As shown in Table 3.4-11, the health risk impacts associated with the Project construction TAC emissions would be well below the SJVAPCD significance thresholds. It is anticipated that decommissioning TAC emissions would result in similar or reduced risks as summarized in Table 3.4-11 for construction. Therefore, all health risks associated with exposure of sensitive receptors to DPM would be less than significant.

Carbon Monoxide

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 many vehicles cold-started and operating at pollution-inefficient speeds, and/or is operating on roadways crowded with non-Project traffic.

As discussed earlier, the SJVAPCD's Impact Assessment Guide uses the LOS to screen for intersections and streets that could experience CO hotspots. Because ambient CO concentrations in the Project area are well below the NAAQS and CAAQS, it is unlikely that the addition of Project construction traffic would lead to exceedances of the standards. While the traffic analysis for the Project does not include an evaluation of LOS for roadway segments and intersections, the roadway segments affected by Project construction traffic currently were found to have sufficient capacity to accommodate the added traffic during the construction period. Further, traffic would only temporarily increase during construction and decommissioning, as long-term operational traffic would be minimal. Thus, the addition of Project construction and decommissioning traffic would not result in potential CO hotspots and associated health effects to receptors. Project-related operational traffic would periodically (during panel washing activities) add up to approximately 63 trips per day to the vicinity of the Project site and therefore result in a less-than-significant impact with respect to potential for CO hotspots (Appendix D).

Mitigation: None required.

Impact 3.4-4: The Heartland Solar Project's ground-disturbing activities could expose sensitive receptors to the risk of contracting Valley Fever. (*Less-than-Significant Impact*)

Construction activities that include ground disturbance can result in fugitive dust, which can cause fungus *Coccidioides immitis* spores to become airborne if they are present in the soil. The fungus grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. In susceptible people and animals, infection occurs when a spore is inhaled.

Workers who disturb soil where fungal spores are found, whether by digging, operating earthmoving equipment, driving vehicles, or 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. Most cases of Valley Fever are mild, and symptoms generally occur within 3 weeks of exposure. 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 5 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.

Given the endemic nature of the disease and the amount of earthmoving activities in Fresno County for agricultural activities and grading and excavation for new residential, commercial, and industrial development, it is typically not possible to attribute any one case of Valley Fever to a specific earthmoving activity. However, it is likely that much of the population (human and wildlife) of Fresno County has already been exposed to Valley Fever as a result of historic and ongoing earthmoving activities and current levels of fugitive dust throughout the region. Such ground-disturbing activities represent a continual source of spores that contribute to the number of Valley Fever cases that are reported each year. Construction and decommissioning activities for the Project would result in localized ground-disturbing activities similar to those that continually occur within the County.

According to the CDPH and the CDC, avoiding working in soils and dusty conditions is the best preventive measure. Because some construction and decommissioning workers cannot avoid participating in soil disturbance activities, minimization of fugitive dust and other engineering controls become the primary preventive measures. Pursuant to AB 203, the Applicant would be required to provide effective awareness training on Valley Fever to all employees annually and before an employee begins work that could reasonably be anticipated to cause substantial dust disturbance. In addition, the CDPH Occupational Health Branch and the CDC make recommendations for the protection of workers. The primary protection measures relate to worker training, dust suppression, and personal protective equipment. With respect to dust suppression, SJVAPCD Rule 8021 would require the Project to reduce visible dust emissions to less than 20 percent opacity. Further regarding dust suppression and personal protective equipment, Cal OSHA regulations relevant to Valley Fever protection and exposure can be found in Title 8 of the California Code of Regulations, in Section 342 (Reporting Work-Connected Fatalities and Serious Injuries), Section 3203 (Injury and Illness Prevention), Section 5141 (Control of Harmful Exposures), Section 5144 (Respiratory Protection), and Section 14300 (Employer Records-Log 300). See Section 3.4.1.3, *Regulatory Setting*, for details.

Because ground disturbance in Fresno County is ongoing and the Project would implement fugitive dust control measures consistent with SJVAPCD Rule 8021 and because independently enforceable protections of worker safety and health are in place, the risk is low that fugitive dust generated by the Project would cause substantial adverse effects on human beings. Implementation of the required fugitive dust control measures would ensure that fugitive dust that could contain *Coccidioides immitis* spores is appropriately controlled. Compliance with the requirements of AB 203, SJVAPCD Rule 802, and Cal OSHA requirements would ensure that Valley Fever–related impacts would be less than significant.

Mitigation: None required.

Criterion d) Whether the Project would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Impact 3.4-5: The Heartland Solar Project could generate odor or dust emissions. (*Less-than-Significant Impact)*

Odors

Vehicle and equipment diesel exhaust emissions would generate odors during Heartland Solar Project construction and decommissioning, attributable to concentrations of unburned hydrocarbons from tailpipes. As described in the *Guidance for Assessing and Mitigating Air Quality Impacts*, due to the subjective nature of odor impacts, SJVAPCD does not have adopted quantitative thresholds to determine if potential odors would have a significant impact (SJVAPCD 2015a). Project-generated odors would be temporary and localized and would not carry over beyond the Project site boundaries. Therefore, odors associated with construction and decommissioning activities would not result in a nuisance to sensitive receptors or any surrounding land uses, and the associated impact would be less than significant.

The SJVAPCD identifies some common types of facilities that are known to produce substantial odors during operation and maintenance, such as wastewater treatment facilities. These odors are typically associated with the byproduct from these facilities. Operation and maintenance of the Project would not introduce any potential sources of odors beyond the use of vehicles for routine inspection and maintenance. Operation and maintenance activities would be minimal and would not result in substantial odors. Therefore, the Project would result in a less-than-significant impact related to the generation of odors that could affect a substantial number of people.

Dust

The Project could cause fugitive dust to be stirred up by vehicles traveling on roads, construction or decommissioning activities, and windblown dust from lands where vegetation has been removed. Dust generation can vary substantially from day to day depending on the prevailing weather conditions. Entrained dust would also result from the exposure of unpaved surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. As discussed in Impact 3.4-2, the Project's maximum annual emissions would not exceed the SJVAPCD annual significance thresholds for PM_{10} or $PM_{2.5}$, which are designed to identify the potential to cause deterioration of ambient air quality that could affect public health.

The Project would be required to comply with SJVAPCD Rule 8021 to control dust emissions generated during grading activities. Standard construction practices that would be employed to reduce fugitive dust emissions include watering of the active sites to maintain acceptable levels of dust generation, covering haul trucks, and minimizing grading and soil movement when winds exceed 30 miles per hour. Regulation VIII would require the Applicants to prepare a Dust Control Plan that would include control measures. Therefore, the Project would cause a less-than-significant impact due to the generation of dust.

Mitigation: None required.

3.4.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Impact 3.4-6: The PG&E Components would affect air quality. (*Less-than-Significant Impact*)

The air pollutant emissions that would be associated with the PG&E infrastructure were incorporated in the CalEEMod emissions calculations. As shown in Table 3.4-6, the maximum emissions during a 12-month rolling period are well below the significance thresholds. The emissions from the Tranquillity switchyard construction would be less than the emissions shown in Table 3.4-6. The gen-tie line emissions would also be lower than those shown in Table 3.4-6,

and only a small amount of these would be from the portion owned by PG&E. These activities are expected to occur in 2027 and 2028. Refer to Table 9 in the Air Quality Technical Report in Appendix D1, which shows the breakdown by year of the construction emissions.

Therefore, with respect to conflicts with the SJVAPCD's air quality plans and incremental increase in non-attainment criteria pollutant emissions, impacts from the PG&E Components would be **less than significant**.

The impacts evaluated in the AAQA and HRA modeling discussed above for the Heartland Solar Project only include the solar and BESS facilities. The ambient criteria pollutant concentrations and health risk impacts associated with the gen-tie line and Tranquility Switching Station would be far lower than those from the solar and BESS facilities. A residential receptor is located approximately 0.8 miles (4,000 feet) from the Tranquility Switching Station, but residential receptors adjacent to the solar facility are located much closer. Thus, the above analysis adequately captured the worst-case ambient criteria pollutant concentrations and health risks that would be associated with the PG&E infrastructure. Therefore, regarding the potential to expose sensitive receptors to substantial pollutant concentrations or odors, impacts from the PG&E infrastructure would be **less than significant**.

Mitigation: None required.

3.4.4 Cumulative Effects Analysis

3.4.4.1 Cumulative Effects of the Heartland Solar Project

Criterion a)

Impact 3.4-1c: Criteria pollutant emissions generated by the Heartland Solar Project would not cause a cumulatively considerable contribution to a significant cumulative effect due to a conflict with the SJVAPCD's air quality plans. (*Less-than-Significant Impact*)

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 1-hour State ozone standard as well as for the federal and State 8-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 2023a). Therefore, there is an existing adverse cumulative impact 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 reasonably foreseeable future projects in the study area also have contributed or will contribute to adverse regional air quality conditions on a cumulative basis. The incremental impact of the Project could combine with other projects identified in Section 3.1.3, *Cumulative Effects*, commencing with the initiation of Heartland Solar Project activities that cause emissions and concluding with the completion of site decommissioning and site reclamation. None of the single projects in the cumulative scenario, 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. While a significant cumulative air quality impact exists in non-attainment regions exceeding the state and/or federal standards, the project-level thresholds for criteria air pollutants are based on levels at which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. As discussed in Section 3.4.4.3, *Direct and Indirect Effects*, the Project-level impact would be less than significant because the Project would not conflict with or obstruct implementation of SJVAPCD's air quality plans. Therefore, the Project's incremental less than significant contribution to cumulative impacts would not be cumulatively considerable.

Mitigation: None required.

Criteria b) and e)

Impact 3.4-2c: The Heartland Solar Project would not result in a cumulatively considerable net increase of criteria pollutants for which the Project region is non-attainment under federal and/or state ambient air quality standards. (*Less-than-Significant Impact*)

Project emissions of pollutants for which the Air Basin is in attainment for state and federal air quality standards (e.g., CO and SO_x) would not lead to a cumulative impact because the individual Project emissions would be well below the SJVAPCD thresholds in an area where there is no existing adverse cumulative impact associated with those pollutants. Maximum annual emissions for NO_x, PM_{10}, and $PM_{2.5}$ generated during Heartland Solar Project construction and decommissioning would not exceed the SJVAPCD's annual thresholds, and so would not result in a significant cumulative impact. Because Project construction and decommissioning emissions would be below the SJVAPCD threshold for NO_x, PM_{10}, and $PM_{2.5}$, the Project's incremental contribution to the cumulative impact in the region, when combined with the incremental impacts of other cumulative projects, would not be cumulatively considerable and the associated cumulative impact would be less than significant.

Heartland Solar Project operation would include very minimal emissions of ozone precursors (ROG and NO_x), PM_{10}, and $PM_{2.5}$, well below the SJVAPCD's thresholds; therefore, operation and maintenance would not result in a cumulatively considerable increase in emissions of non-attainment pollutants and the associated cumulative impact would be less than significant.

Mitigation: None required.

Criterion c)

Impact 3.4-3c: The Heartland Solar Project would not contribute to a significant cumulative effect relating to the exposure of sensitive receptors to substantial pollutant concentrations. (*Less-than-Significant Impact*)

The SJVAPCD considers TAC emissions to be localized impacts. The SJVAPCD has established thresholds of significance for TACs that are conservative and protective of health impacts on sensitive receptors. Because impacts from TACs are localized and the thresholds of significance for TACs have been established at such a conservative level, a proposed project's risks over the

individual thresholds of significance are also considered cumulatively significant (SJVAPCD 2015a). However, for this Project, the results of the health risk assessment demonstrated that emissions from Project construction would not lead to health risk impacts in excess of the SJVAPCD 20-in-a-million cancer threshold and chronic hazard index of 1. Therefore, the Project would not cause a cumulatively considerable contribution and the resulting cumulative impact related to exposure to TACs would be less than significant.

SJVAPCD also considers cumulative CO impacts to be accounted for in a CO hotspot analysis (SJVAPCD 2015a). As discussed under Impact 3.4-3, construction-related traffic is not anticipated to create or contribute to a CO hotspot, as there are no existing CO hotspots in the vicinity of the Project sites, and Project emissions would not be concentrated and would disperse rapidly. Therefore, impacts to sensitive receptors regarding potential CO hotspots resulting from the Project's contribution to cumulative traffic-related air quality impacts would be less than significant.

Mitigation: None required.

Impact 3.4-4c: The Heartland Solar Project would not contribute to a significant cumulative effect due to ground-disturbing activities that could expose sensitive receptors to the risk of contracting Valley Fever. ***(Less-than-Significant Impact)***

As explained in Section 3.4.1.2, *Environmental Setting*, Fresno County is considered "highly endemic" for Valley Fever (CDIR 2022) and western Fresno County in particular is considered an area of elevated Valley Fever activity (Fresno County 2023a). Thus, there is a significant adverse cumulative condition to which the Heartland Solar Project and the projects identified in Section 3.1.3, *Cumulative Effects Approach*, could contribute. The implementation of fugitive dust control measures by the Project and other projects under construction in the area consistent with Rule 8021 would reduce exposure to the *Coccidioides immitis* spores that cause Valley Fever. In addition, the Applicants would be required to ensure that all independently enforceable protections of worker safety and health are in place and implemented. The Project's incremental contribution to cumulative Valley Fever-related impacts would be less than significant. As a result, the Project's incremental contribution to cumulative effects would not be cumulatively considerable and so less than significant.

Mitigation: None required.

Criterion d)

Impact 3.4-5c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the generation of odor or dust emissions. (*Less-than-Significant Impact)*

Odor impacts from the Heartland Solar Project would be very minimal and localized, which would not contribute to cumulative odor impacts in the area. Cumulative odor impacts would be less than significant. None of the projects identified in Section 3.1.3, *Cumulative Effects Approach*, would cause odor impacts that could combine with those of the Project. There is no

existing adverse cumulative effect due to odor, and the Project's incremental impact would not cause one. The cumulative impact would be less than significant.

The Heartland Solar Project could contribute to a cumulative impact in relation to dust impacts. However, the Project and other projects under construction in the Air Basin would be required to comply with SJVAPCD Rule 8021 to control dust emissions generated during grading activities. In addition, the Project and other projects would comply with Regulation VIII that would require a Dust Control Plan, and all applicable control measures would be fully implemented. Therefore, the Project's incremental contribution to cumulative dust impacts would be less than significant.

Mitigation: None required.

3.4.4.2 Cumulative Effects of the PG&E Components

Impact 3.4-6c: The PG&E Components would not cause a cumulatively considerable contribution to a significant cumulative effect on air quality. (*Less-than-Significant Impact*)

The incremental increase in air quality impacts associated with the PG&E Components were found not to cause a cumulatively considerable contribution to a significant cumulative effect due to a conflict with the SJVAPCD's air quality plans. In addition, work needed to construct, operate and maintain the PG&E Components would not lead to a significant cumulative impact because the incremental contribution of PG&E Component emissions would be well below the SJVAPCD thresholds in an area where there is no existing adverse cumulative impact associated with those pollutants. The impacts associated with the PG&E infrastructure were shown to be even less than those associated with the Heartland Solar Project, as discussed in Section 3.4.3.3, *Direct and Indirect Effects of the PG&E Components*. Therefore, the PG&E infrastructure construction would not result in a cumulatively considerable increase in emissions of non-attainment pollutants and the associated cumulative impact would be **less than significant**.

With respect to exposure of sensitive receptors to substantial pollutant concentrations, the PG&E Components would not cause a cumulatively considerable contribution and the resulting cumulative impact related to exposure to criteria pollutants, TACs, and odors would be less than significant. As discussed in Section 3.4.3.3 for the PG&E Components, the contribution to the cumulative impact would be even less than that from the Project and be **less than significant**.

Mitigation: None required.

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3.5 Biological Resources

This section identifies and evaluates issues related to biological resources, including vegetation, wetlands, and aquatic and wildlife resources. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project).

Comments received during the scoping period pertaining to biological resources include those from the California Department of Fish and Wildlife (CDFW) and the Santa Rosa Rancheria Tachi-Yokut Tribe. CDFW noted the potential for Swainson's hawk (*Buteo swainsoni*) nesting and recommended surveys and mitigation for this species; while the Tribe requested replanting after construction with plants native to the area, including salt grass (*Distichlis spicata*). See Appendix A, *Scoping Report*.

This analysis is based in part on the Project-specific and site-specific biological resources analyses provided in Appendix E, *Biological Resources.* The *Biological Resources Reconnaissance Report* provided in Appendix E1 was prepared in 2022 by Environmental Science Associates (ESA) on behalf of the County. The *Swainson's Hawk Survey Report 2021* provided in Appendix E2, *Biological Resources Report* provided in Appendix E3, *Analysis of Impacts to Swainson's Hawk Nesting and Foraging Habitat* provided in Appendix E4, and *Burrowing Owl Survey Report* provided in Appendix E5 were prepared on behalf of Heartland Solar 1, LLC (Applicant). The preparers of this Draft EIR independently reviewed these and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance, in combination with other materials included in the formal record, in the preparation of this Draft EIR.

3.5.1 Setting

3.5.1.1 Environmental Setting

The Project site is located in the San Joaquin Valley in the Coit Ranch and Levis, California, 7.5-minute U.S. Geological Survey (USGS) quadrangles. It is bounded by West American Avenue to the north, Los Angeles Avenue to the west, Manning Avenue to the south, and State Route (SR) 33 to the east.

The Project site consists of flat terrain approximately 185 to 200 feet above mean sea level. Community types identified within the Project site include non-native annual grassland and agricultural land. Developed/disturbed land cover is not considered a natural community type. The nearest areas supporting natural habitats are the Mendota Wildlife Area and Fresno Slough (2.3 miles northeast of the Project site) and the interior Coast Ranges (more than 6 miles southwest of the Project site, across Interstate 5).

Natural Communities

Natural communities are assemblages of plant species that occur together in the same area and are defined by species composition and relative abundance. The natural community classification is

based on field observations, and the *Manual of California Vegetation Second Edition* (Sawyer et al. 2009). Natural communities generally correlate with wildlife habitat types; wildlife habitats were classified and evaluated using the *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). ESA conducted vegetation and land cover surveys for the entire Project site including the gen-tie line corridor in April 2022 (Appendix E1) and identified grassland, eucalyptus (*Eucalyptus* sp.), agricultural lands, and disturbed lands, as described below and shown on **Figure 3.5-1**, *Vegetation Communities and Land Cover*.

Grassland

Grasslands are an herbaceous natural community dominated by grasses, forbs, and other plants. This natural community is present on the margins of the site in areas that are not disked for agriculture. Non-native grasslands are dominated by non-native, annual species including slender wild oat (*Avena barbata*), rip-gut brome (*Bromus diandrus*) and foxtail brome (*B. madritensis*). The associated herbaceous cover includes non-native yellow star thistle (*Centaurea solstitialis*), black mustard (*Brassica nigra*), and wild geranium (*Geranium dissectum*).

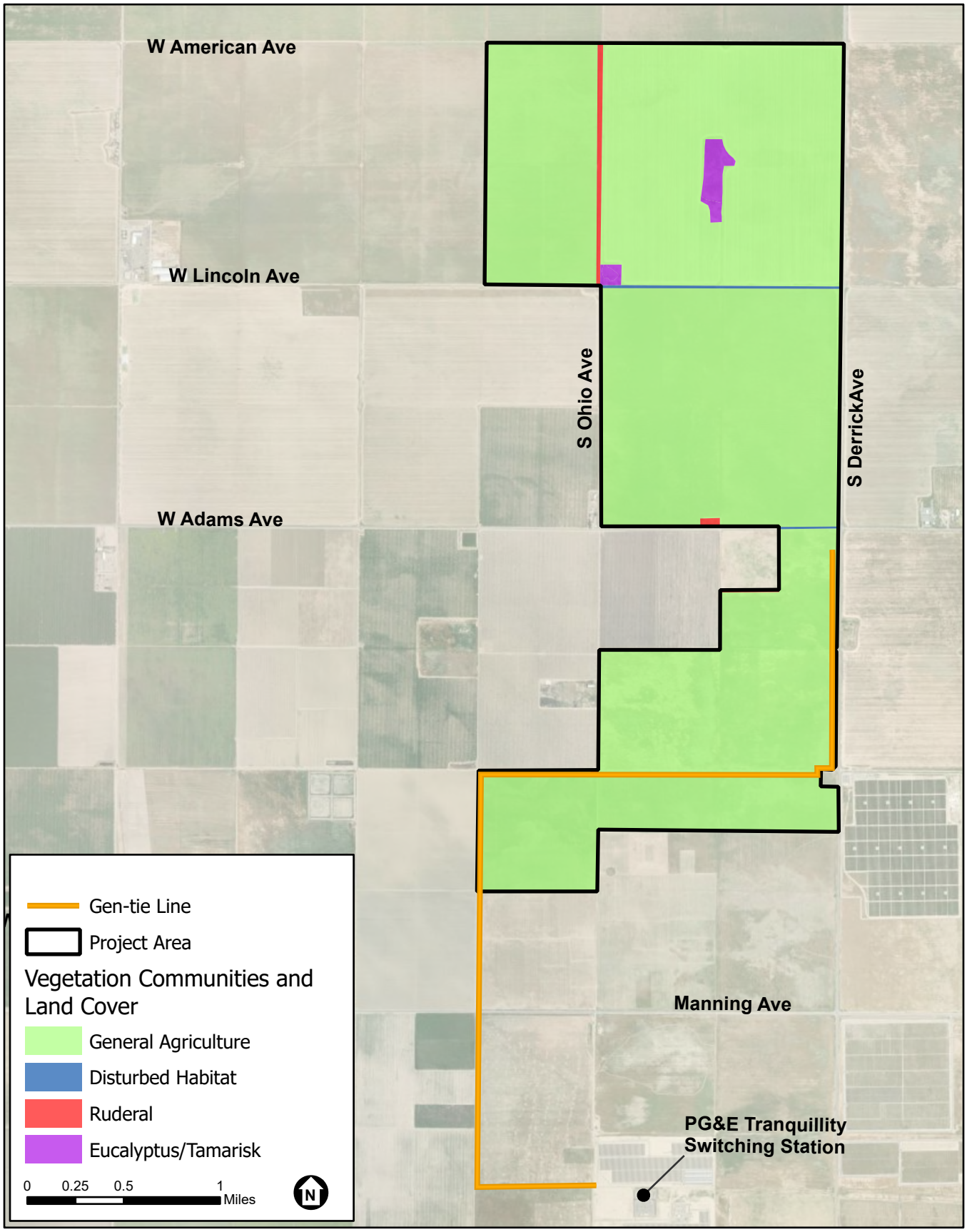
Annual grasslands provide foraging and limited breeding habitat for wildlife. Reptiles such as the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and gopher snake (*Pituophis melanoleucus*), and birds such as western bluebird (*Sialia mexicana*), western meadowlark (*Sturnella neglecta*), lesser goldfinch (*Spinus psaltria*), and barn swallow (*Hirundo rustica*) may be present. Small mammals may include deer mouse (*Mus musculus*), California vole (*Microtus californicus*), or black-tailed jackrabbit (*Lepus californicus*). Raptors including red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*) may forage on the rodents present in grasslands. Non-native grasslands are also important foraging grounds for bat species including myotis (*Myotis* sp.) and pallid bats (*Antrozous pallidus*).

Eucalyptus/Tamarisk Groves

Eucalyptus groves are considered semi-natural in California, as they are composed of non-native species (Sawyer et al. 2009). Eucalyptus trees are the dominant tree canopy, with sparse understory shrub and herbaceous layers. Two small eucalyptus groves are present in the solar facility site with saltbush (*Atriplex* sp.) shrubs, tamarisk (*Tamarix ramosissima)* trees, and non-native brome grasses also present. Due to the paucity of trees in the region, these eucalyptus groves are havens for nesting birds, with nesting sites for raptors, including Swainson's hawk, red-tailed hawk, and great horned owl (*Bubo virginianus*), as well as smaller birds, including loggerhead shrike (*Lanius ludovicianus*) and house finch (*Haemorhous mexicanus*). Small mammals and reptiles may also be present in the shrubs or leaf litter present on the Project site.

Agricultural Lands

Agricultural lands cover most of the Project site. The presently fallowed fields were barren of vegetation when reviewed, except for ruderal, non-native grasses in the margins. Similar wildlife species to non-native grasslands may be present foraging or living in agricultural fields, although seasonal disking decreases populations of small mammals and associated burrows.



SOURCE: DUDEK, 2022; ESA, 2022

Heartland Solar Project

Figure 3.5-1

Vegetation Communities and Land Cover

Developed/Disturbed

Developed/disturbed portions of the Project site include dirt roads and gravel along the planned gen-tie line near the solar facility substation location shown in Figure 3.5-1. These are mainly barren grounds subject to continued disturbance and support minimal vegetation. Developed/ disturbed land cover generally does not provide suitable habitat for plant or wildlife species, though small mammal burrows and ruderal plant species may be present, and migratory birds such as red-tailed hawk or western kingbird (*Tyrannus verticalis*) may nest in the proposed 120-foot-tall microwave tower or power line.

Special Status Species

Several species known to occur at the Project site or in the regional vicinity are protected pursuant to federal and/or state endangered species laws or have been designated as Species of Special Concern by CDFW. In addition, California Environmental Quality Act (CEQA) Guidelines Section 15380(b) defines rare, endangered, or threatened species that are not included in any listing; for example, vascular plants on California Native Plant Society Rare Plant Ranking (CRPR) Rank 1 or 2 are considered to meet Section 15380(b) requirements. Species recognized under these terms are collectively referred to as "special-status species."

A list of special-status species with potential to occur in the regional vicinity of the Project site was compiled from a twelve-quad search of the California Natural Diversity Database (CNDDB) (CDFW 2025), a twelve-quad search on the California Native Plant Society's (CNPS) Rare Plant Inventory (CRPR) (CNPS 2025), a Project footprint search from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database (USFWS 2025), and biological literature of the region for the following 7.5-minute USGS topographic quadrangles: Levis, Coit Ranch, Mendota Dam, Firebaugh, Broadview Farm, Tranquillity, Cantua Creek, Monocline Ridge, Ciervo Mountain, Lillis Ranch, Tres Picos Farms, and Chaney Ranch. Local biological studies were also reviewed to assess the potential for local occurrence of rare species. In 2022, Dudek (Appendix E3) presented the findings of focused 2018 surveys for special-status plants, San Joaquin kit fox (*Vulpes macrotis mutica*) and burrowing owl (*Athene cunicularia*), with a broad assessment of special-status species potential for the site. In 2021, Heritage Environmental Consultants (Appendix E2) performed protocol-level surveys for Swainson's hawk. In addition, ESA performed a reconnaissance-level biological review in 2022 (Appendix E1) to verify and update prior survey findings. In 2025, Tetra Tech evaluated potential Project impacts to Swainson's hawk resulting from a loss of foraging habitat during the construction phase of the Project and prior to site restoration (Appendix E4). In 2025, Tetra Tech presented the findings of a focused habitat assessment and burrow survey, as well as winter season protocol surveys for burrowing owl, conducted in December 2024 and January 2025 and breeding season surveys for burrowing owl, conducted in April, May, and June 2025 (Appendix E5).

From the above list, species were assessed for potential to occur based on habitat requirements and distribution relative to natural communities in the vicinity. Records of special-status species occurrences within 5 miles were mapped (Appendix E3). Two rare plant species (Munz's tidytips [*Layia munzii*] and San Joaquin woollythreads [*Monolopia congdonii*]) have been recorded in the vicinity of the site, but the records are from the 1930s and 1940s (CDFW 2023); the site has been heavily disturbed in intervening years, removing the habitat for these plants. While numerous

special-status wildlife species have been recorded within 5 miles, these occurrences are in the Fresno Slough area, a CDFW preserve; or to the southwest in the Coast Ranges. Those species with potential to occur at the Project site are described below.

Special-Status Plants

Reconnaissance-level field surveys did not identify any federally listed or state-listed or CRPR-ranked plant species (Appendix E1), and no special-status plants are considered likely to occur on the Project site, due to widespread agricultural disturbance. No rare plants were found during focused 2018 surveys (Appendix E3).

Sensitive Natural Communities

Sensitive natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects, such as wetlands or riparian areas. These communities may or may not contain special-status plants or their habitat. Survey results indicate that no sensitive natural communities are present on the site. The April 2022 reconnaissance survey did not identify any sensitive natural communities (Appendix E1), and no sensitive natural communities were identified in 2018 (Appendix E3).

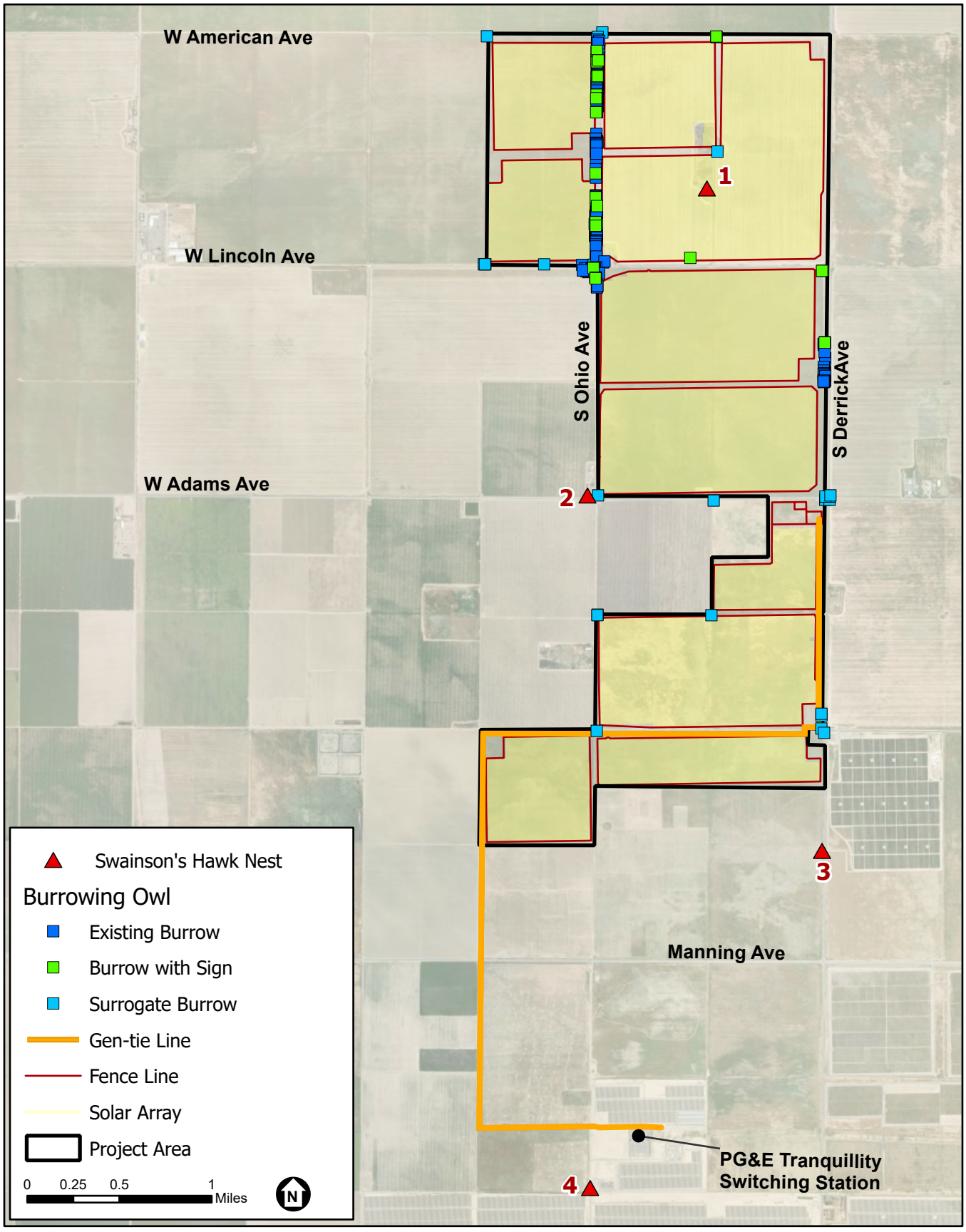
Special-Status Wildlife Species

Database results, reconnaissance surveys, and protocol-level surveys identified federally listed or state-listed or special-status wildlife species having potential to occur at the Project site or immediately adjacent. Site photographs, including bird nests, are provided in the appendices; bird nest locations are also shown on **Figure 3.5-2**, *Burrowing Owl and Swainson's Hawk Nest Locations*. In addition to the following special-status species, a red-tailed hawk nest was observed in a transmission tower along the proposed gen-tie line corridor and a great horned owl nest was present in a tamarisk tree within the Project site (Appendix E1). Nest locations for Swainson's hawk and loggerhead shrike are described below and in the 2021 Swainson's Hawk Survey Report (Appendix E2), and findings from the burrowing owl habitat assessment and non-breeding season and breeding season protocol surveys are described below and in Appendix E5.

Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk is a state-listed threatened species. They are large migratory hawks that nest in North America and winter in Central and South America. Swainson's hawks begin arriving in California in late February and depart for their wintering grounds in early September (Woodbridge 1998). Nests are typically constructed in sturdy trees within or near agricultural lands, riparian corridors, and roadside trees. Nests are composed of a platform of sticks, bark, and fresh leaves. Swainson's hawks reside in the Central Valley from March through October, with eggs typically laid in April and early May (peaking in late April). Suitable foraging and nesting habitat for this species occurs within the Project site.

Two unsuccessful Swainson's hawk nests were observed in 2018 during focused surveys (Appendix E3), and one apparently unsuccessful Swainson's hawk nest attempt was observed in 2021 (Appendix E2). During the April 2022 reconnaissance survey (Appendix E1), ESA biologists observed a pair of Swainson's hawks constructing a nest in a willow (*Salix* sp.) approximately 1,200 feet south of the proposed gen-tie line near the Tranquillity service yard (nest 4, Figure 3.5-2) and additional unoccupied potential Swainson's hawk nests (Appendix E1).



SOURCE: ESA 2025; ESRI 2025; Tetra Tech, 2025

Heartland Solar Project

Figure 3.5-2

Burrowing Owl and Swainson's Hawk Nest Locations

In April and May of 2025, Tetra Tech biologists conducted focused Swainson's hawk surveys for the Project site and a 10-mile buffer to update prior survey results. A total of three Swainson's hawk nests were documented within the Project site and a 0.5-mile buffer during the 2025 surveys. One nest was within a tamarisk tree located within the bounds of the Project site, to the north of West Lincoln and south of West American Avenue and to the east of South Ohio Avenue and to the west of South Derrick Avenue (nest 1, Figure 3.5-2). Two additional nests were located outside of the Project site but within the 0.5-mile buffer, with one immediately adjacent to the Project site near South Ohio Avenue and West Adams Avenue (nest 2, Figure 3.5-2) and the second approximately 0.3 mile south of the Project site along State Route 33 (nest 3, Figure 3.5-2). Figure 3.5-2 shows the most recent active and potential Swainson's hawk nest observations.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

San Joaquin kit fox is federally listed as endangered and state-listed as threatened. San Joaquin kit fox was federally listed as endangered in 1967 (32 *Federal Register* 4001). They are a permanent resident of arid grasslands and open scrubland, where friable soils are present. Dens are required year-round for reproduction, shelter, temperature regulation, and protection from predators (USFWS 1998). Historically their habitat included native alkali marsh and saltbush scrub of the valley floor, but the availability of such habitats has diminished markedly due to agricultural conversion. Grasslands with friable (loose) soils are considered the principal habitat for denning, foraging, and dispersal. The kit fox's historical range has greatly diminished, primarily due to habitat loss; their current range centers on the southern and western parts of the San Joaquin Valley (USFWS 1998). The Applicant team conducted focused surveys for this species in 2018 (Appendix E3); while suitable burrows were present on the fringe of agricultural fields within the Project site, no sign of kit fox presence was found. Similarly, no sign of this species were observed during the burrowing owl habitat assessment which examined and mapped all burrows present on the Project site (Appendix E5). The species is considered to have a low likelihood to occur but could transit between areas of higher habitat value in the region. There is one CNDDB record 4.5 miles south of the Project site (CDFW 2025).

Tricolored Blackbird (*Agelaius tricolor*)

Tricolored blackbird has no federal status and is state-listed as threatened. Tricolored blackbird is a colonial species that nests in dense vegetation in and around freshwater wetlands. When nesting, tricolored blackbirds generally require freshwater wetland areas large enough to support colonies of 50 pairs or more. They prefer freshwater emergent wetlands with tall, dense cattails or tules for nesting, but will also breed in thickets of willow, blackberry, wild rose, or tall herbs, and occasionally within agricultural fields. Outside of breeding season, flocks are highly mobile and forage in grasslands, croplands, and wetlands (Zeiner et al. 1988–1990). There is no suitable nesting habitat present within the Project site, but the disturbed agricultural fields of the Project site could provide foraging habitat. The nearest record of the species is 3.1 miles northeast of the site near Fresno Slough (CDFW 2025).

Western Burrowing Owl (*Athene cunicularia hypugaea*)

On October 10, 2024, the California Fish and Game Commission designated the western burrowing owl as a candidate species. The Commission is expected to decide whether listing is warranted in late 2025 or early 2026. Western burrowing owl are residents of open, dry grassland

and desert. They occupy burrows for both breeding and roosting. They use burrows excavated by ground squirrels and other small mammals and will use human-made burrows and cavities. Where the number and availability of natural burrows is limited, owls may occupy human-made burrows such as drainage culverts, cavities under piles of rubble, discarded pipe, and other tunnel-like structures (Zeiner et al. 1988–1990).

The Applicant team conducted focused surveys for burrowing owl in 2018, according to CDFG guidance (2012) (Appendix E3) and found no sign of owls, although suitable burrows 3 inches or more in diameter were observed; these were also noted during the April 2022 reconnaissance survey (Appendix E1). The nearest CNDDB record of the species is approximately 2.5 miles northeast of the Project site (CDFW 2025).

In December 2024 and January, April, May, and June 2025, a focused habitat assessment and burrow survey, as well as winter season and breeding-season protocol surveys, were conducted by Tetra Tech biologists in accordance with the guidelines stated in the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (The California Burrowing Owl Consortium 1993) and the *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game [CDFG] 2012) for a survey area encompassing the Project fence line, gen-tie line, and a 150-meter buffer.

During the burrow survey in December 2024, biologists mapped all burrows or surrogate burrows within areas identified as suitable habitat. A total of 24 burrows with signs of burrowing owl activity (such as live owl observations, whitewash, feathers, pellets, prey remains, or eggshell fragments), 207 existing burrows with no sign, and 36 surrogate burrows (such as pipes, culverts, debris piles, or other various openings), for a total of 267 burrows or surrogate burrows, were mapped within the survey area during the survey efforts (Figure 3.5-2). Of these, one burrow with sign and one existing burrow were mapped within the Project fence line. The remaining observations were outside of the Project fence line, but within the 150-meter survey buffer. During the burrow survey, most of the burrows identified were found within the two drainage basins adjacent to South Ohio Avenue and South Derrick Avenue that, based on current design, are anticipated to remain undisturbed by Project activities.

During the winter season protocol surveys (December 11 and 12, 2024 and January 7 and 8, 2025), observations of up to eight individual burrowing owls during the first two surveys and four to six individuals during the latter two were documented. Most burrowing owl sightings occurred outside the anticipated disturbance area but within the survey buffer in the drainage basins adjacent to South Ohio Avenue between where it intersects with West American Avenue and West Lincoln Avenue, and adjacent to South Derrick Avenue between where it intersects with West Lincoln Avenue and West Adams Avenue. A single owl was observed at Burrow ID 4 within the anticipated disturbance area during the first survey (Appendix E5). The surveys revealed that individual burrowing owls likely use multiple burrows in the area, leading to uncertainty in determining the exact number of unique individuals present.

During the breeding season surveys (April 9, May 5, May 27, and June 19, 2025), all previously mapped burrows were visited. No live individual burrowing owls were observed during the

breeding season surveys, and no new sign which may indicate burrowing owl presence during the breeding season was observed (Appendix E5).

Loggerhead Shrike (*Lanius ludovicianus*)

Loggerhead shrike is a California Species of Special Concern. It is widespread in North America and is a yearlong resident of California at lower elevations, primarily in the Central Valley and Coast Ranges. Shrikes prefer open habitats with scattered shrubs, trees, posts, or fences to provide hunting perches, and nearby spiky vegetation or barbs to use for impaling prey. ESA biologists found an active loggerhead shrike nest in tamarisk tree just east of SR 33 and between Adams Avenue and South Avenue in 2022 (Appendix E1), and a second potentially active nest suitable for loggerhead shrike was observed by ESA biologists in a willow immediately northeast of the intersection of American Avenue and Ohio Avenue in 2022.

American Badger (*Taxidea taxus*)

American badger is a California Species of Special Concern. The badger is an uncommon permanent resident found throughout most of California. It is active throughout the year, except on the North Coast. This species may be nocturnal or diurnal, and frequents drier open stages of most shrub, forest, and herbaceous habitats, and open, uncultivated ground. Badgers dig burrows in friable soil for cover and prey on burrowing rodents. They frequently reuse old burrows, although some may dig a new den each night, especially in summer. Home range estimates are often hundreds of acres but vary geographically and seasonally (Zeiner et al. 1988-1990). The Applicant team conducted focused surveys for this species in 2018 (Appendix E3); no suitable burrows or sign of badger presence was found. Similarly, no sign of badger was observed during the habitat assessment surveys for burrowing owl conducted in 2024 and 2025 (Appendix E5). If present, this species would likely only occur on-site in transit to areas of higher habitat value in the region. There are no CNDDB records within five miles of the Project site (CDFW 2025).

Bat Species

Bats, including special-status bats, have the potential to occur at the Project site. Western red bat (*Lasiurus blossevillii*) is a California Species of Special Concern. This species is associated strongly with riparian areas, particularly mature stands of cottonwood and sycamore, and may also be found in orchards. Western red bats roost individually in dense clumps of tree foliage in riparian areas, orchards, and suburban areas. This species ranges through the Central Valley, southern Coast Ranges, Salinas Valley, and San Francisco Bay area (Pierson et al. 2006). Greater western mastiff bat (*Eumops perotis californicus*) is also a California Species of Special Concern. They occur in many open, semi-arid to arid habitats including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub and urban (Western Bat Working Group 2017). Night roosts for these and other species of bats are generally associated with rock crevices, unoccupied buildings, hollows in large trees, and bridges. Due to the general absence of trees and structures, bat roosting habitat is limited on the Project site; however, mature tamarisk and eucalyptus trees at the site may provide night roosts for tree-roosting bat species.

Crotch's Bumble Bee (*Bombus crotchii*)

The Crotch's bumble bee is a California candidate species. There are no CNDDB records for this species within 15 miles of the Project (CDFW 2025); this species has recently been elevated to a

candidate species and thus was not addressed in earlier biological resources reports that were prepared for the Project.

These social insects live in colonies composed of a queen, workers, and reproductive individuals (males and new queens) (Hatfield et al. 2015). Crotch's bumble bee have an annual colonial life cycle, meaning only the new, mated queens overwinter. Crotch's bumble bees are active from February through October (CDFW 2025). Queen bees emerge from overwintering in late February, peaking in April, with a second pulse in July and ending in late October. From late-March through September the colony, consisting of males and worker bees, remains active (Xerces Society 2018; CDFW 2025).

Crotch's bumble bee occur in grasslands and shrublands, and species overwinter in soft, disturbed soil or under debris such as leaf litter (CDFW 2023). In early spring, after overwintering, the queen bee emerges and begins foraging and searching for a suitable colony nesting site. Crotch's bumble bees do not dig or make their own nests, but primarily nest underground in abandoned small mammal burrows, downed debris, such as woody cover, brush piles, or fallen logs, and human-made structures such as rock walls (CDFW 2025; Williams et al. 2014). The Crotch's bumble bee is a foraging generalist that feeds on a variety of widely distributed plant genera, including sages (*Salvia* spp.), lupines (*Lupinus* spp.), medics (*Medicago* spp.), phacelias (*Phacelia* spp.), and milkweeds (*Asclepias* spp.) (Koch et al. 2012; Williams et al. 2014).

The majority of the Project site does not provide suitable habitat for Crotch's bumble bee due to disturbance of habitat from agricultural disking, and surrounding areas are generally subject to similar land use practices that further limit the potential for this species to occur in the vicinity. As such, this species has low potential to occur.

Monarch Butterfly (*Danaus plexippus*)

On December 10, 2024, the monarch butterfly was proposed as threatened under the federal Endangered Species Act of 1973 (FESA). While there are no CNDDB records for this species within 20 miles of the Project (CDFW 2025), this species was recently elevated to be proposed threatened species, and thus it was not addressed in earlier biological resources reports that were prepared for the Project.

Monarch butterflies typically begin their breeding activities in California from late March through early September. They breed in open fields, meadows, and areas with abundant milkweed, which is the sole food source for their larvae. These areas often include prairies, grasslands, roadside ditches, and gardens. The peak egg-laying period often occurs from April to June, coinciding with the emergence of new milkweed growth. Adult monarchs require nectar from flowering plants for energy. In California, monarch butterflies typically overwinter from late October to early March. During this period, they seek out specific locations along the California coast where they can cluster together for warmth and protection from the elements. These overwintering sites are typically characterized by eucalyptus trees and cool, moist conditions (USFWS 2024).

The Project site does not provide suitable habitat for monarch butterfly, due to disturbance of potential milkweed habitat from agricultural disking. There are no suitable overwintering sites within the regional vicinity of the Project. As such, this species is not anticipated to occur.

Wildlife Movement Corridors

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development. Topography and other natural factors in combination with urbanization can fragment or separate large open-space areas. The fragmentation of natural habitat can create isolated "islands" of vegetation and habitat that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. The retention of wildlife movement corridors ameliorates the effects of such fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished. Such movement may also promote genetic exchange between separated populations.

The proposed Project site consists of a large expanse of fallowed agricultural fields and disturbed lands surrounded by active roadways. There is no surface water present and limited cover is available for wildlife; thus, the Project site has limited utility for wildlife movement.

Critical Habitat for Listed Plant or Wildlife Species

The USFWS defines the term *critical habitat* in the FESA as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The Project site is not within designated or proposed critical habitat for any species.

3.5.1.2 Regulatory Setting

Federal

Endangered Species Act of 1973, as amended (16 U.S.C. Sections 1531–1543)

The FESA and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. In addition, the FESA defines species as threatened or endangered and provides regulatory protection for listed species. The FESA also provides a program for the conservation and recovery of threatened and endangered species as well as the conservation of designated critical habitat that the USFWS determines is required for the survival and recovery of these listed species.

Section 9 lists those actions that are prohibited under the FESA. The definition of "take" includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Although unauthorized take of a listed species is prohibited, take may be allowed when it is incidental to an otherwise legal activity. Section 9 prohibits take of listed species of fish, wildlife, and plants without special exemption. The definition of "harm" includes significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns related to breeding, feeding, or shelter. "Harass" is

defined as actions that create the likelihood of injury to listed species by disrupting normal behavioral patterns related to breeding, feeding, and shelter significantly.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an Incidental Take Permit (ITP).

Migratory Bird Treaty Act (16 U.S.C. Sections 703–711)

The Migratory Bird Treaty Act (MBTA) is the domestic law that affirms and implements a commitment by the United States to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. Unless and except as permitted by regulations, the MBTA makes it unlawful at any time, by any means, or in any manner to intentionally pursue, hunt, take, capture, or kill migratory birds anywhere in the United States. The law also applies to disturbance and removal of nests occupied by migratory birds or their eggs during the breeding season.

Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. Section 668)

The federal Bald and Golden Eagle Protection Act protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this act. Take of bald and golden eagles includes to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" (16 United States Code [U.S.C.] Section 668c). "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior (72 *Federal Register* 31132; 50 Code of Federal Regulations [CFR] Section 22.3).

State

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

The California Endangered Species Act (CESA) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. For projects that would affect a listed species under both the CESA and the FESA, compliance with the FESA would satisfy the CESA if the CDFW determines that the federal incidental take authorization is "consistent" with the CESA under 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).

Fish and Game Code Sections 2080 and 2081

Section 2080 of the Fish and Game Code 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 [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." Under Fish and Game Code Section 86, "take" means to "hunt, pursue, catch, capture, or kill, or attempt to

hunt, pursue, catch, capture, or kill." 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. CDFW makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

Fish and Game Code Sections 3503, 3503.5, and 3513

Under these sections of the Fish and Game Code, a 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; the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or nongame birds; or the taking of any nongame bird pursuant to Fish and Game Code Section 3800, whether intentional or incidental.

California Environmental Quality Act 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 meets certain specified criteria:

(A) The species is "endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or

(B) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or

(C) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.

Local

Fresno County 2024 General Plan

The Fresno County General Plan (Fresno County 2024) outlines goals, policies, and implementation programs intended for the protection of biological resources county-wide, including the following, which apply to the Project's proposed solar facility:

> ***Policy LU-B.13: Biological Resources.*** In conjunction with environmental reviews under CEQA, the County shall require applicants to identify biological resources to determine if there are sensitive and/or important flora and fauna that require special protection measures.
>
> *Implementation Program LU-A.B*: During the develop review process, the County shall evaluate and incorporate all practical buffers for new non-agricultural uses

proposed in agricultural areas of the county. 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.

Policy OS-E.1: Avoid Habitat Loss. 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 [CDFW] 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: Construction Buffers. 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: Wildlife Habitat Protection. 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: Wildlife Habitat Management Practices. The County shall encourage private landowners to adopt sound wildlife habitat management practices, as recommended by the California Department of Fish and Wildlife officials and the U.S. Fish and Wildlife Service.

Policy OS-E.9: Biological Resource Evaluation. 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.

Goal OS-F: To preserve and protect the valuable vegetation resources of Fresno County.

Policy OS-F.5: Rare, Threatened, and Endangered Species. 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: Natural Topography. The County shall require developers to take into account a site's natural topography with respect to the design and siting of all physical improvements in order to minimize grading.

Policy OS-F.8: Vegetation for Wildlife. 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.

Fresno County Code

The following section of the Fresno County Code applies to the Project's proposed solar facility:

Chapter 13.12: Trees and Shrubs. This section establishes permit rules for tree planting and landscaping, including species of trees, planting locations and irrigation regimes.

PG&E San Joaquin Valley Operations and Maintenance Habitat Conservation Plan

The Project site is located within Pacific Gas and Electric Company's (PG&E) San Joaquin Valley Operations and Maintenance Habitat Conservation Plan (SJVHCP) Area (Jones & Stokes 2006). However, the SJVHCP only provides coverage for operations and maintenance-related activities, and not new construction. Therefore, PG&E construction associated with this Project would not be a covered activity under the SJVHCP. However, PG&E has identified and committed to implementing the Construction Measures (CMs) listed below to help ensure that PG&E's construction activities would result in less-than-significant impacts.

- **CM BIO-1:** Conductors and ground wires would be spaced sufficiently apart so that raptors cannot contact two conductors or one conductor and a ground wire causing electrocution

(Avian Power Line Interaction Committee [APLIC] 2006), or raptor protection would be installed.

- **CM BIO-2:** Appropriate methods to reduce the risks of avian collisions would be incorporated into the project's design (APLIC 2012).
- **CM BIO-3:** If feasible, applicants would avoid construction during the migratory bird nesting or breeding season. When it is not feasible to avoid construction during the nesting or breeding season, applicant would perform a survey in the area where the work is to occur. This survey would be performed to determine the presence or absence of nesting birds. If an active nest (i.e., containing eggs or young) is identified, then a suitable construction buffer would be implemented by a qualified biologist to ensure that the nesting or breeding activities are not substantially adversely affected. If the nesting or breeding activities are being conducted by a federal- or state-listed species, the applicant would consult with the USFWS and CDFW as necessary. Monitoring of the nest would continue until the birds have fledged or construction is no longer occurring on the site. If an inactive nest is identified, then careful nest removal under the supervision and direction of qualified biologists would occur.
- **CM BIO-4:** If a raptor nest is observed during pre-construction surveys, a qualified biologist would determine if it is active. If the nest is determined to be active, then the biological monitor would monitor the nest to ensure that nesting or breeding activities are not substantially adversely affected. If the biological monitor determines that activities associated with the Project are disturbing or disrupting nesting or breeding activities, then the monitor would make recommendations to reduce noise or disturbance in the vicinity of the nest and the applicant would implement them.

As noted, operations and maintenance on PG&E-owned infrastructure associated with the Project would be a covered activity under the SJVHCP. The SJVHCP allows PG&E to continue its San Joaquin Valley operations and maintenance programs in conformity with the requirements of federal and state endangered species laws and the California Fish and Game Code. The plan requires all PG&E contractors to complete required habitat conservation plan (HCP) training to work in the SJVHCP Plan Area. SJVHCP General Avoidance and Minimization Measures (AMMs) BIO-1 through BIO-8 are summarized below and additional measures, such as those protecting nesting birds, also would apply.

- **AMM BIO-1:** Speed of vehicles during construction and operation and maintenance activities would be limited to 15 mph. In addition, construction and maintenance employees would be advised that care should be exercised when commuting to and from the project area to reduce accidents and animal road mortality.
- **AMM BIO-2:** Conductors and ground wires would be spaced sufficiently apart so that raptors cannot contact two conductors or one conductor and a ground wire causing electrocution (Avian Power Line Interaction Committee [APLIC] 2006), or raptor protection would be installed subject to PG&E consent for application of such measures to distribution lines and other relevant components.
- **AMM BIO-3:** Appropriate methods to reduce the risks of avian collisions would be incorporated into the project's design (APLIC 2012), subject to PG&E consent for application of such measures to distribution lines and other relevant components.
- **AMM BIO-4:** If feasible, applicants would avoid construction during the migratory bird nesting or breeding season. When it is not feasible to avoid construction during the nesting or

breeding season, applicants would perform a survey in the area where the work is to occur. This survey would be performed to determine the presence or absence of nesting birds. If an active nest (i.e., containing eggs or young) is identified, then a suitable construction buffer would be implemented to ensure that the nesting or breeding activities are not substantially adversely affected. If the nesting or breeding activities are being conducted by a federal- or state-listed species, the applicant would consult with the USFWS and CDFW as necessary. Monitoring of the nest would continue until the birds have fledged or construction is no longer occurring on the site. If an inactive nest is identified, then careful nest removal under the supervision and direction of qualified biologists would occur.

- **AMM BIO-5:** If a raptor nest is observed during pre-construction surveys, a qualified biologist would determine if it is active. If the nest is determined to be active, then the biological monitor would monitor the nest to ensure that nesting or breeding activities are not substantially adversely affected. If the biological monitor determines that activities associated with the Project are disturbing or disrupting nesting or breeding activities, then the monitor would make recommendations to reduce noise or disturbance in the vicinity of the nest and the applicant would implement them.
- **AMM BIO-6:** All excavated holes or trenches that are not filled at the end of a workday would be covered, or a wildlife escape ramp would be installed to prevent the inadvertent entrapment of wildlife species.
- **AMM BIO-7:** The use of outdoor lighting during construction and operation and maintenance activities would be minimized.
- **AMM BIO-8:** A WEAP would be implemented to educate all construction and operation and maintenance workers on site-specific biological and non-biological resources and proper work practices to avoid harming wildlife during construction or operation and maintenance activities.

3.5.2 Significance Criteria

The Project would result in a significant impact on 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

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; 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.

3.5.3 Direct and Indirect Effects

3.5.3.1 Methodology

The following analysis uses the criteria from Appendix G of the CEQA Guidelines to identify direct and indirect effects on biological resources. It is based on existing and potential biological resources that occur or could occur on the Project sites and immediate vicinity as identified through a review of relevant literature and occurrences databases, and focused biological surveys. Such resources include sensitive habitats, including potentially jurisdictional features; special-status plant and wildlife species; and potential for wildlife movement corridors.

3.5.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion 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 or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Impact 3.5-1: The Heartland Solar 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 or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (*Less than Significant with Mitigation Incorporated*)

The Heartland Solar Project site does not have the potential to host special-status plants due to disturbance of habitat from agricultural disking and road construction.

Special-status mammals, notably San Joaquin kit fox and American badger, have low potential to occur on-site due to disking and lack of loose soils for burrowing, but may occasionally transit the site and use the suitable burrows which were present on the fringe of agricultural fields. Should these species be present during construction, they could be injured or killed by vehicles or equipment. In addition, during either construction or operation, workers on the construction site could inadvertently harm these animals by entrapping them, damaging habitat outside work areas. speeding, or leaving trash on the site. These impacts would be potentially significant but would be reduced to a less-than-significant level by the implementation of **Mitigation Measure 3.5-1: Protection of San Joaquin Kit Fox, Burrowing Owl, and American Badger During Construction** and **Mitigation Measure 3.5-2: Worker Environmental Awareness Program Training and Best Management Practices for Biological Resources**. These mitigation measures would reduce potential impacts on these species to a less-than-significant level through the implementation of preconstruction surveys and avoidance of areas where these species are observed. USFWS and/or CDFW would be coordinated with, as appropriate, if these species are present and impacts are determined to be unavoidable. In addition, best management practices would be implemented including a worker environmental awareness training program, limiting

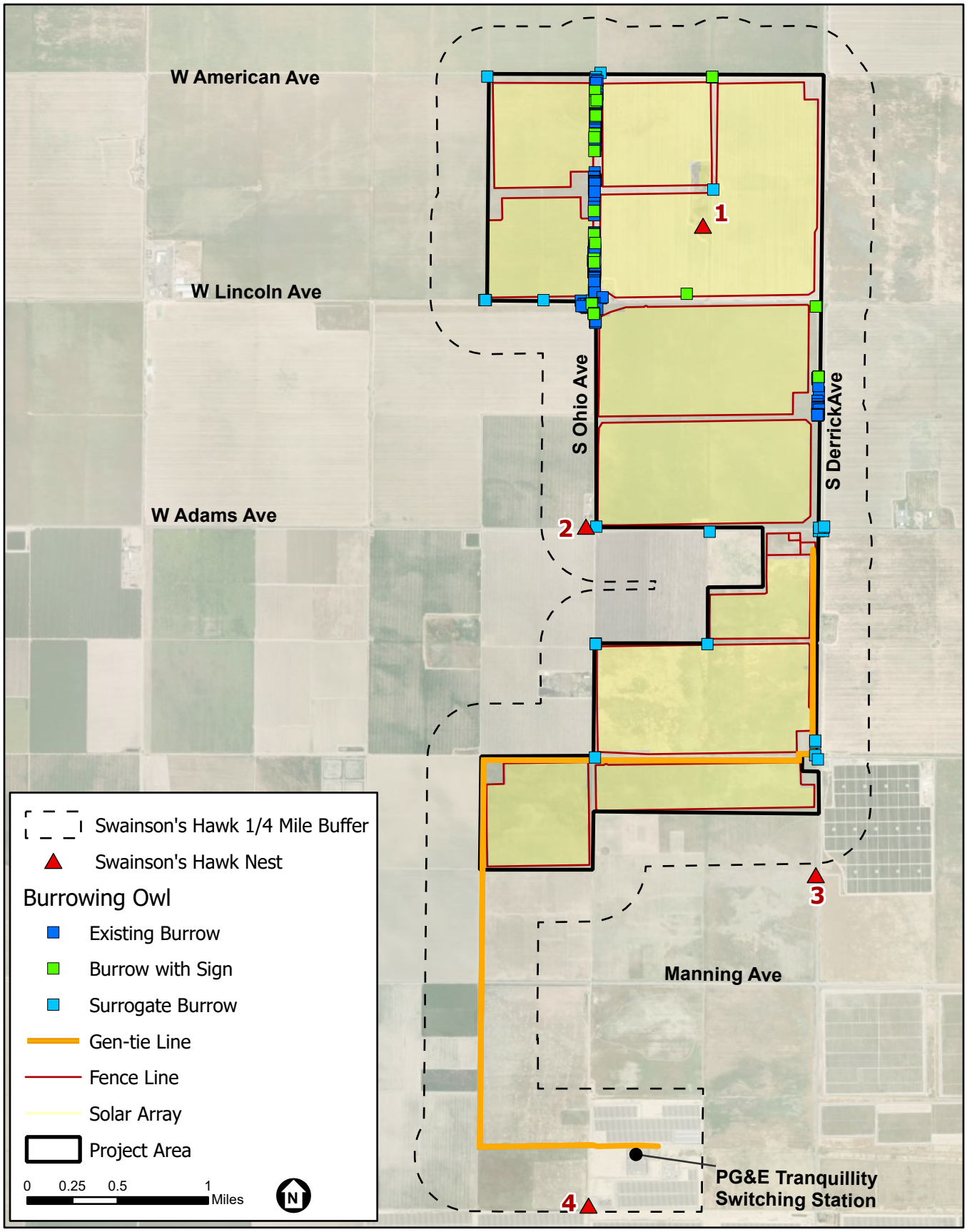
disturbance areas, preventing inadvertent entrapment in trenches or holes, and instituting speed limits that would further minimize any potential impacts on these species.

The Project site has several trees that have been used for nesting by Swainson's hawk and other raptors, as well as special-status nesting birds and protected migratory birds. In April 2022, two active Swainson's hawk nests were observed within 0.25 mile of the site and the gen-tie line near the Tranquillity yard (Appendix E1). An additional inactive nest that could potentially be utilized by Swainson's hawk was present in a willow on the site. Active or possibly active nests of other raptors (great horned owl and red-tailed hawk) and special-status migratory birds (loggerhead shrike) were also observed on and near the site in April 2022. In December 2024, a reconnaissance survey found no nests at locations where they had previously been observed. Several trees where the nests were located have died, and in others, no signs of nests were observed, indicating that the nests had fallen and were not rebuilt. Furthermore, during surveys prior to and during construction of the Luna Valley Solar Project, located directly to the south of the Project site, no nest was observed at the Tranquillity substation (see Figure 3.5-2). Three Swainson's hawk nests were located within 0.5-mile of the Project site during the 2025 breeding season. Recently active or potential nest sites for Swainson's hawk are shown on Figure 3.5-2. While many potential Swainson's hawk nests identified during prior surveys are no longer present, suitable foraging and nesting habitat for this species occurs within and within 0.25 mile of the Project site (see **Figure 3.5-3**, *Nest Buffer for Swainson's Hawk*); therefore, these birds have the potential to be disturbed by Project construction. Trees that are documented to have active or historic nests for Swainson's hawk within the past five years would not be removed to avoid potential impacts on the species. Construction work in the vicinity of nests also could result in nest failure if the parents abandoned or repeatedly left the nest to avoid disturbance; such activities would be avoided by the implementation of **Mitigation Measure 3.5-3**.

As stated in Mitigation Measure 3.5-3, removal of trees that have documented usage by Swainson's hawks as nesting trees within the past 5 years would not occur. Therefore, there would not be a reduction in the number of known nesting trees in the Project vicinity, and the impact of Project construction on Swainson's hawk nesting trees would be less than significant.

A foraging study for Swainson's hawk was conducted following an approach that has previously been used in Fresno and Kings counties to support CEQA determinations (Appendix E4). For this analysis, the CEQA significance threshold was conservatively set at 70 percent of the existing habitat. If the Project would result in the amount of suitable foraging habitat being reduced to less than 70 percent of the existing amount, the Project would have a significant impact on the regional Swainson's hawk population under CEQA. This 70 percent threshold is considered adequate to provide a buffer of foraging habitat above the minimum number of acres needed (Estep 2015).

The Project would affect approximately 2,362 acres of suitable foraging habitat for Swainson's hawk, although the foraging habitat is low-quality due to the relative absence of small mammal burrows and scarcity of prey. Removal of 2,362 acres of habitat would reduce the available Swainson's hawk foraging habitat within 10 miles of the Project site to 67,184 acres, which is 96.5 percent of the existing amount, and well above the 70 percent threshold (Table 3 in Appendix E4). Therefore, the Project's impact on the regional Swainson's hawk population through



SOURCE: ESA 2025; ESRI 2025; Tetra Tech, 2025

Heartland Solar Project

Figure 3.5-3

Nest Buffer for Swainson's Hawk

foraging habitat loss would be less than significant. Studies in Sacramento County observed Swainson's hawks foraging within smaller solar projects under certain conditions, which indicates that the species may forage within the Project site if adequate spacing and vegetation are maintained (Estep 2021).

Potentially significant direct effects on nesting birds, including Swainson's hawk, would be reduced to a less-than-significant level through implementation of **Mitigation Measure 3.5-3**. This mitigation measure would reduce impacts on Swainson's hawk to a less-than-significant level through requiring preconstruction nesting bird surveys for Swainson's hawk. If active Swainson's hawk nests are identified, a 0.25-mile buffer would be established and no construction within the buffer would be allowed until a qualified biologist has determined that the nest is no longer active.

The Project is located primarily on areas that are disked on a regular basis, and therefore these areas are not considered to be suitable habitat for burrowing owl. However, the results of the habitat assessment and winter season protocol survey for burrowing owl (Appendix E5) indicate that discrete portions of the Project perimeter along existing drainage ditches that are not tilled support burrowing owl during the overwintering season. (Prior surveys at the site during the summer did not identify burrowing owl (Appendices E1 and E3), so it is anticipated that the individuals observed during the winter of 2024/2025 are seasonal migrants, and that burrowing owl are not present on the Project site during the breeding season.) Based on current Project design, it is anticipated that burrows that burrowing owl were observed using during winter 2024/2025 would be avoided, but this would be determined during final design.

The potential exists for Project activities to affect the species as a result of direct impacts or substantial indirect impacts, such as direct encounters with moving vehicles, burrow collapse from equipment, nest abandonment, and/or entrapment in construction materials. Therefore, the Project proponent would either prepare an Avoidance Plan that would establish appropriate no-disturbance buffers around an active (occupied) burrowing owl burrow based on CDFW guidance (CDFG 2012) to ensure that take under CESA is avoided, or obtain an ITP from CDFW for the species. The Project would adhere to all conditions specified in the Avoidance Plan or the ITP. Potentially significant effects on this species would be reduced to a less-than-significant level with the Project proponent obtaining an ITP or Avoidance Plan for the species, and with implementation of **Mitigation Measure 3.5-1** and **Mitigation Measure 3.5-2**. These mitigation measures would reduce impacts to a less-than-significant level by requiring preconstruction surveys for burrowing owl; if any burrowing owls are identified, an avoidance buffer would be implemented. Appropriate best management practices would also be implemented to minimize potential impacts to burrowing owl. These measures include minimizing disturbance areas, covering pipes, culverts, or similar structures that burrowing owl may take shelter within or use as surrogate burrows, implementing speed limits, and implementing a trash abatement program to reduce attractiveness of the site for predators.

Migratory nesting birds have limited potential to nest on the site due to regular disturbances associated with disking and limited nesting sites. However, to minimize any potential impacts on nesting birds, preconstruction nesting bird surveys would be implemented as required by

Mitigation Measure 3.5-3, and appropriate avoidance buffers around active nests would be implemented to ensure avoidance of the nest.

Direct and indirect impacts on avian species may occur during Project operations and maintenance through collision with Project facilities, including transmission wires, fencing, and solar array structures. New transmission and communications lines and structures would be constructed in accordance with the most recent Avian Power Line Interaction Committee guidance to reduce the potential for bird injury and mortality from collisions and electrocution. Potential direct impacts on migratory bird species may also occur through attraction to solar panels ("lake effect") from utility-scale solar panel arrays. The "lake effect" refers to the perception of solar panels as water by birds (Kosciuch et al. 2021). Solar panels are both reflective and polarize light, which are elements thought to mimic water. As a result, some have hypothesized that solar panels can attract bird species that mistake the panels for bodies of water, and that some birds in some landscapes could be attracted to them resulting in possible injury or death (Diehl et al. 2024). To reduce potential significant impacts on migratory birds, the solar panels for the Project would be designed with surfaces coated to absorb as much light as possible, rather than to reflect it, to minimize glare, and would be on a tracking system.

In an assessment of avian mortality at utility scale solar energy facilities, Walston et al. (2016) examined the California Valley Solar Ranch, a 250 MW PV solar project located in San Luis Obispo. Findings indicated that the average mortality associated with the PV solar facility was approximately 0.5 bird per MW per year. Kosciuch et al. (2020) conducted a comprehensive review of bird mortality patterns from studies completed January 2013 to September 2018 at 11 PV solar facilities in Southern California in Imperial, Riverside, San Bernardino, and San Luis Obispo counties, and Nevada in Clark and Mineral counties to estimate PV-related bird mortality. This study found four patterns consistent among the facilities: (1) Most fatalities were of unknown cause and only reported as feather spots, (2) most carcasses were from abundant ground-dwelling birds, (3) no relatively large fatality events were detected, and (4) most carcasses were found in fall. Although data from PV solar array-type facilities indicate instances of avian mortality resulting from collisions, the best available scientific information to date does not indicate a significant risk of substantial avian mortality occurring at solar facilities; thus, this impact is less than significant.

Bats, including special-status bats, have the potential to occur at the Project site. However, due to the rarity of trees and structures, bat roosting habitat is very limited on the Project site. Presence of bats on the site is anticipated to be limited to flyovers while foraging, or occasional night-time roosting on mature trees. With implementation of **Mitigation Measure 3.5-2**, workers would be informed about the potential for bats to roost on the Project site, and best management practices such as limiting areas of disturbance, trash abatement, and avoiding the intentional killing or collection of wildlife would minimize the potential for impacts to bats.

> **Mitigation Measure 3.5-1: Protection of San Joaquin Kit Fox, Burrowing Owl and American Badger During Construction**
>
> ***San Joaquin kit fox and American badger*:** Preconstruction surveys shall be conducted by a qualified biologist for the presence of San Joaquin kit fox and American badger

within 14 days prior to commencement of construction activities pursuant to the USFWS (1999) *Standardized Recommendations for Protection of the San Joaquin Kit Fox*. The surveys shall be conducted in areas of suitable habitat for San Joaquin kit fox and American badger. Areas that have been disked or cultivated within 12 months prior to the start of ground-disturbing activities are not considered suitable. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days prior to disturbance within active portions of the site. If no potential San Joaquin kit fox or American badger dens are identified, then no further mitigation is required. If potential dens are observed and avoidance is determined to be feasible (as defined in CEQA Guidelines Section 15364 consistent with the USFWS [1999] *Standardized Recommendations for Protection of the San Joaquin Kit Fox*) by a qualified biologist in consultation with the Project owner and the County, buffer distances shall be established prior to construction activities.

If avoidance of the potential dens is not feasible, the following measures shall be implemented to avoid potential adverse effects to the San Joaquin kit fox or American badger:

- If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent them from being used during construction.
- If the qualified biologist determines that a potential non-natal den may be active, an on-site passive relocation program shall be implemented with prior approval from the USFWS and CDFW. This program shall consist of excluding San Joaquin kit foxes or badgers from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for 72 hours 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 or American badgers have stopped using active dens within the Project boundary, the dens shall be hand-excavated, as stated above for inactive dens.

***Burrowing owl*:** The Project owner shall have burrowing owl surveys performed within 14 days before the initiation of equipment staging or ground-disturbing activities. A qualified wildlife biologist shall conduct preconstruction surveys on the site and immediate vicinity only in areas of the site with suitable burrowing habitat to locate any active breeding or wintering burrowing owl burrows, no fewer than 14 days prior to initial ground-disturbing activities (e.g., vegetation clearance, grading, tilling). Areas that have been plowed within 12 months prior to the start of ground-disturbing activities are not considered suitable habitat. The survey methodology shall be consistent with the methods outlined in the Appendix D of the CDFG (2012) *Staff Report on Burrowing Owl Mitigation*, or latest appropriate guidance documents, with regard to transect spacing, weather conditions, and time of day requirements. If the work activity halts for a period of 14 days or more, the survey would need to be conducted again prior to the continuation of site activities. Copies of the survey results shall be submitted to CDFW and the Fresno County Department of Public Works and Planning.

- If inactive (unoccupied) burrowing owl burrows are detected any time of the year, the burrows may be excavated by hand with a shovel or covered (i.e., with sandbags) to prevent burrowing owls from re-using them during construction. The burrow's inactive status will be determined by the approved biologist through monitoring prior to burrow excavation.

- If active (occupied) burrowing owl burrows are detected, no ground-disturbing activities, such as vegetation clearance, grading, or other construction activities, shall be permitted within a no-disturbance buffer around the burrow. The size of any employed no-disturbance buffers will be in accordance with the recommended restricted activity dates and setback distances by level of disturbance for burrowing owls outlined in the CDFG (2008) *Guidance for Burrowing Owl Conservation:*
  - 75 meters (250 feet) from occupied burrows during breeding season, and
  - 50 meters (160 feet) from occupied burrows during non-breeding season.
- Depending on the level of disturbance and its duration, visual and auditory screening, and similar, a smaller buffer may be established by a qualified biologist in coordination with CDFW based on the visibility and sensitivity responses of each individual burrowing owl.
- If active burrowing owl avoidance is infeasible, then the project shall consult with CDFW regarding potential for project activities to result in take of burrowing owl and shall comply with all avoidance, minimization, and compensatory mitigation requirements set forth in any ITP issued for the project by CDFW authorizing take of the species.

Mitigation Measure 3.5-2: Worker Environmental Awareness Program Training and Best Management Practices for Biological Resources

During construction, operation and maintenance, and decommissioning of the facility, the Project owner and/or contractor shall implement the following general avoidance and protective measures to protect San Joaquin kit fox and other special-status wildlife species:

- Prior to the issuance of grading or building permits and for the duration of construction activities, the Project owner, or its contractor, shall implement a Worker Environmental Awareness Program (WEAP) to train construction personnel how to recognize and protect biological resources on the Project site. The WEAP training shall include a review of the special-status species and other sensitive biological resources that could exist in the Project area, the locations of sensitive biological resources and their legal status and protections, and measures to be implemented for avoidance of these sensitive resources, highlighting San Joaquin kit fox, Swainson's hawk, burrowing owl, and loggerhead shrike.
- The Project owner shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. All proposed impact areas, including solar fields, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid special-status species where feasible. Construction-related activities, vehicles, and equipment outside of the impact zone shall be avoided. These areas shall be flagged and disturbance activities, vehicles, and equipment shall be confined to these flagged areas.
- To prevent inadvertent entrapment of wildlife during construction, all excavated, steep-walled holes or trenches with a 2-foot or greater depth shall be covered with plywood or similar materials at the close of each working day, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they shall be thoroughly inspected by the approved biological monitor for trapped animals. If trapped animals are observed, escape ramps or

structures shall be installed immediately to allow escape. If a listed species is trapped, the USFWS and/or CDFW shall be contacted immediately.

- All construction pipes, culverts, or similar structures with a 4-inch or greater diameter that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved until a qualified biologist has been consulted and the animal has either moved from the structure on its own accord or until the animal has been captured and relocated by the biologist.
- Vehicles and equipment parked on the site shall have the ground beneath the vehicle or equipment inspected for the presence of wildlife prior to moving.
- Vehicular traffic shall use existing routes of travel. Cross-country vehicle and equipment use outside of the Project properties shall be prohibited.
- A speed limit of 20 miles per hour shall be enforced within all construction areas.
- A long-term trash abatement program shall be established for construction, operation, and decommissioning and submitted to the County. Trash and food items shall be contained in closed containers and removed daily to reduce the attractiveness to wildlife such as common raven (*Corvus corax*), coyote (*Canis latrans*), and feral dogs.
- Workers shall be prohibited from bringing pets to the Project site and from feeding wildlife in the vicinity.
- Intentional killing or collection of any wildlife species shall be prohibited.

Mitigation Measure 3.5-3: Protection of Nesting Birds, including Swainson's Hawk

If construction is scheduled to commence outside of nesting season (September 1 to January 31), no preconstruction surveys are required for nesting birds, including Swainson's hawk and other raptors. Trees that have documented usage by Swainson's hawks as nesting trees within the past 5 years shall not be removed.

During the breeding season (February 1 to August 31), in order to avoid impacts to nesting birds in the Project site and immediate vicinity, a qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitat within the Project site where vegetation removal or ground disturbance is planned. The survey shall focus on potential nest sites and cover an area up to 0.25-mile buffer around the site for Swainson's hawk, 300 feet for common raptors, and 100 feet for passerines in areas where access to neighboring properties is available or visible using a spotting scope or binoculars. Surveys shall be conducted no more than 14 days prior to construction activities. If construction is halted for 14 days or more, the area shall be re-surveyed prior to re-initiating work.

Surveys need not be conducted for the entire Project site at one time; they may be phased so that each work area is surveyed no more than 14 days prior to the start of construction in that area. The surveying biologist must be qualified to determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance. If active nests are found, a suitable buffer (300 feet for common raptors; 0.25 mile for Swainson's hawk; 100 feet for passerines) shall be established around active nests and no construction within the buffer 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). Encroachment into these buffers for non-special-status species may occur at the discretion of a qualified biologist. Encroachment into these buffers for special-status species may occur in coordination or consultation with CDFW.

Significance after Mitigation: Less than significant. The implementation of Mitigation Measures 3.5-1, 3.5-2, and 3.5-3 would reduce impacts to a less-than-significant level because impacts on special-status species would be avoided, or minimized by surveys, monitoring and relocation if required; site workers would be trained to avoid biological resources and vehicle and construction site impacts would be curtailed; and nesting birds, including Swainson's hawk, would be avoided in season with suitable construction avoidance buffers.

Criterion 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, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

The Heartland Solar Project would cause no impact due to a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. The Project site contains no riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or by CDFW or USFWS. Therefore, the Heartland Solar Project would have no impact on these resources. (*No Impact*)

Mitigation: None required.

Criterion c) Whether the Project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

The Heartland Solar Project would cause no impact due to a substantial adverse effect on federally protected wetlands as defined by Clean Water Act Section 404 through direct removal, filling, hydrological interruption, or other means because no aquatic features (such as marsh, vernal pool, coastal, or other federally protected wetlands) are present on the Heartland Solar Project site. (*No Impact*)

Mitigation: None required.

Criterion 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.

The Heartland Solar Project would not interfere substantially with the movement of any native resident or migratory fish species or impede the use of native wildlife nursery sites because there are no perennial water features on the Project site (and thus no associated movement corridors for

aquatic species) and because no wildlife nursery sites have been identified on the site. Therefore, the Project would have no impact related to these aspects of criterion d). (*No Impact*)

Impact 3.5-2: The Heartland Solar Project could interfere with the movement of native resident or migratory wildlife species. (*Less-than-Significant Impact*)

As analyzed in Section 3.5.1.1.3, *Wildlife Movement Corridors*, the Project site does not provide substantial wildlife corridors, as it is located on and surrounded by an expanse of fallowed agricultural fields, disturbed lands, and active roadways. No surface water is present and limited cover is available for wildlife; thus, the Project site has limited utility for wildlife movement. The Project site is also not located in an identified terrestrial movement corridor for San Joaquin kit fox (USFWS 1998) or other terrestrial wildlife species. Although San Joaquin kit fox was recorded foraging less than 5 miles south of the site in 1997 (CDFW 2025), no sign of this species were observed during surveys in 2018 (Appendix E3), or during surveys of burrows on the Project site conducted during the burrowing owl habitat assessment in 2024 and 2025 (Appendix E5). Therefore, transit of the site by individuals is considered unlikely.

The Project site is located within a significant avian migration route known as the Pacific Flyway, which covers the entire western side of North America. Although individual birds may be affected by collision with transmission lines or towers, the Project is not anticipated to affect the regional bird populations that use the Pacific Flyway.

The Heartland Solar Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established wildlife corridors, nor would it impede the use of nursery sites. Therefore, the Project would have a less-than-significant impact for criterion d). (*Less-than-Significant Impact*)

Mitigation: None required.

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

Impact 3.5-3: The Heartland Solar Project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (*Less than Significant with Mitigation Incorporated*)

Fresno County has policies and ordinances protecting biological resources, including wetland and riparian areas (Fresno County General Plan Goal OS-D); vegetation (Fresno County General Plan Goal OS-F), oak woodlands (Fresno County General Plan Policy OS-F.10); trees and shrubs (County Code Chapter 13.12); and flowers, foliage or fruit, trees, shrubs, plants, and grass in public parks and recreation areas. However, the Heartland Solar Project would not conflict with any local policies or ordinances protecting biological resources, because none of these protected resources are present within the Heartland Solar Project site.

The County also has policies protecting fish and wildlife habitat (Fresno County General Plan Goal OS-E). The Heartland Solar Project site does not contain any fish habitat. The Project site

and immediate vicinity contain active and potential nesting habitat for Swainson's hawk, burrowing owl, other raptors and migratory birds, including loggerhead shrike, as well as suitable denning habitat for wildlife species, including San Joaquin kit fox. Implementation of the preconstruction wildlife surveys, worker environmental awareness and wildlife avoidance and protection measures described in **Mitigation Measures 3.5-1** through **3.5-3**, would avoid or minimize potential impacts to these species and ensure compliance with General Plan Goal OS-E. Therefore, with mitigation incorporated, the Project would not conflict with local policies and ordinances protecting biological resources. The impact of the Project would be less than significant with mitigation incorporated.

Mitigation: Implement Mitigation Measures 3.5-1, 3.5-2, and 3.5-3.

Significance after Mitigation: Less than significant. The implementation of Mitigation Measures 3.5-1, 3.5-2 and 3.5-3 would reduce impacts to a less-than-significant level because impacts on special-status species would be avoided, or minimized by surveys, monitoring and relocation if required; site workers would be trained to avoid biological resources and vehicle and construction site impacts would be curtailed; and nesting birds would be avoided in season with suitable construction avoidance buffers.

Criterion f) Whether the Project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The Heartland Solar Project would cause no impact due to a conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan. (*No Impact*)

The closest HCP is the Eastern Fresno Habitat Plan, which governs an area located more than 50 miles east of the Project site. There are no adopted NCCPs in Madera County or in any of the adjacent counties.

The Project's proposed connection to the Tranquillity Switching Station would be within the PG&E SJVHCP coverage area. However, new construction activities are not a covered activity under this HCP. While construction of the Heartland Solar Project would not be a covered activity, the mitigation measures would be compatible with the avoidance and minimization measures in the HCP. There are no adopted NCCPs in Fresno County or in any of the adjacent counties. Thus, there would be no impact under criterion f).

Mitigation: None required.

3.5.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the off-site point of change of ownership pole to the existing PG&E-owned Tranquillity

Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint, and would not be expected to affect any biological resources.

Impact 3.5-4: The PG&E Components could affect biological resources. (*Less-than-Significant Impact*)

Installation of the new power poles and 1,000-foot gen-tie line outside the footprint of the proposed Heartland Solar Project facility would have potential to harm nesting Swainson's hawk and other nesting migratory birds, and to increase the risk of collision and electrocution to birds and bats. PG&E **CMs BIO-3 and BIO-4** (Section 3.5.1.2) would be applied to reduce harm to nesting birds from PG&E components. Impacts on nesting Swainson's hawk and other nesting migratory birds would be reduced to a less-than-significant level with implementation of these CMs.

For collision and electrocution risk from the gen-tie line, PG&E **CMs BIO-1 and BIO-2** would ensure adherence to current APLIC design standards to minimize the potential for avian injury and mortality from collisions and electrocution, and would reduce these potential impacts to a less-than-significant level.

Because gen-tie line poles would be placed in disturbed, dry ground, where no burrows suitable for burrowing owl were identified (see Figure 3.5-3), no impacts would be expected on terrestrial wildlife, nor on rare plants or natural communities. Similarly, no impacts on wildlife corridors would be expected, because of the small footprint of pole construction (work areas for each 10-foot-diameter pole placed 50 feet deep, for up to 22 months). Following construction, the presence of the poles and overhead line would not restrict movement of terrestrial species. Thus, this impact would be **less than significant**, with no mitigation required.

Mitigation: None required.

3.5.4 Cumulative Effects Analysis

The geographic scope of this cumulative analysis includes the extent of the regional population of Swainson's hawk and other potentially affected wildlife species, or the extent of the local watershed, in the case of impacts to aquatic resources. The list of projects considered for cumulative analysis is provided in **Table 3.1-1** in Section 3.1.3, *Cumulative Effects Approach*. The temporal scope of cumulative analysis is the life of the Project.

3.5.4.1 Cumulative Effects of the Heartland Project

Criterion a)

Impact 3.5-1c: The Heartland Solar Project would make an incremental contribution to cumulative effects on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (*Less than Significant with Mitigation Incorporated*)

As analyzed in Section 3.5.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause a potential significant impact due to a substantial adverse effect on one or more species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

This incremental impact would combine with the incremental impacts of the projects identified in Table 3.1-1 in Section 3.1.3, *Cumulative Effects Approach*, including 16 solar facilities, 6 additional energy facilities, and 4 other projects (agricultural and aviation) in the local area. All these projects could cause impacts that would combine to cause or contribute to a cumulative impact to nesting birds. The Project would incrementally contribute to the cumulative impact on nesting birds by removing foraging habitat and vegetation from the Project site.

As a part of the foraging assessment for Swainson's hawk, a cumulative impact assessment was conducted (Appendix E5). For purposes of this assessment, the cumulative impact is defined as all existing planned and proposed solar energy projects within an approximately10-mile radius around the Project site. Solar energy projects comprise the majority of planned and proposed non-agricultural projects in the vicinity that could affect Swainson's hawk foraging habitat.

Including the proposed Project, there are approximately 13 existing, planned, or reasonably foreseeable solar projects within 10 miles of the Project site. The total area of solar projects that are proposed (i.e., not constructed) is 5,311 acres, of which 5,036 acres are considered suitable foraging habitat and 275 acres are considered unsuitable foraging habitat based on existing land cover mapping. Therefore, an additional 5,036 acres of suitable Swainson's hawk foraging habitat would be cumulatively affected by solar projects.

When considering development of the cumulative projects, the available Swainson's hawk foraging habitat within 10 miles of the Project site would be reduced to 59,786 acres, which is 89.0 percent of the existing amount and above the recommended 70 percent CEQA significance threshold for loss of Swainson's hawk foraging habitat. Therefore, the Project would contribute to a less-than-significant cumulative impact to the regional population of Swainson's hawk through foraging habitat loss. Cumulatively, Fresno County has more than 200 million acres of farmland suitable for Swainson's hawk foraging (Fresno County Convention and Visitors Bureau 2023). Thus, the combined projects would represent less than 1/10,000 of the available foraging acreage.

These cumulative projects could also have a significant impact on other wildlife species unless reduced by the implementation of **Mitigation Measure 3.5-1**, which would protect San Joaquin kit fox, burrowing owl, and American badger during construction; **Mitigation Measure 3.5-2**, which would require worker environmental awareness program training and best management

practices for biological resources; and **Mitigation Measure 3.5-3**, which would protect nesting birds, including Swainson's hawk.

There is no existing significant adverse cumulative condition to which the Project could contribute incremental impacts. See Section 3.5.1.1, *Environmental Setting*. However, the incremental impacts of the Project, in combination with the incremental impacts of closely related past, present, and reasonably foreseeable future projects, could combine to cause a significant cumulative impact. However, as with the Project, other cumulative projects would be expected to implement similar mitigation measures to avoid and minimize impacts on special-status species and their habitat. The Project's incremental contribution would not be cumulatively considerable, because direct impacts on special-status species would be minimized and impacts on foraging habitat would be minor relative to the amount of foraging habitat available. Thus, the Project's incremental impact, with the implementation of **Mitigation Measures 3.5-1**, **3.5-2**, and **3.5-3**, would not be cumulatively considerable.

Mitigation: Implement Mitigation Measures 3.5-1, 3.5-2, and 3.5-3.

Significance after mitigation: Less than significant for the reasons explained above.

Criterion b)

As analyzed in Section 3.5.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause no impact due to a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS. Therefore, the Project could not cause or contribute to any significant cumulative effect relating to criterion b). (*No Impact*)

Mitigation: None required.

Criterion c)

As analyzed in Section 3.5.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause no impact due to a substantial adverse effect on federally protected wetlands as defined by Clean Water Act Section 404 through direct removal, filling, hydrological interruption, or other means because no aquatic features (such as marsh, vernal pool, coastal, or other federally protected wetlands) are present on the Project site. Therefore, the Project could not cause or contribute to any cumulative effect relating to criterion c). (*No Impact*)

Mitigation: None required.

Criterion d)

As analyzed in Section 3.5.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause no impact due to a substantial interfere with the movement of any native resident or migratory fish species or impedance of the use of native wildlife nursery sites because there are no perennial water features on any of the three Project sites (and thus no associated movement corridors for aquatic species) and because no wildlife nursery sites have been identified on any of the facility sites. (*No Impact*)

Impact 3.5-2c: The Heartland Solar Project could contribute to cumulative effects relating to interference with the movement of native resident or migratory wildlife species. (*Less-than-Significant Impact*)

The Project site does not provide substantial wildlife corridors, as it is located on and surrounded by an expanse of fallowed agricultural fields, disturbed lands, and active roadways. No surface water is present and limited cover is available for wildlife; thus, the Project site has limited utility for wildlife movement. The Project site is also not located in an identified terrestrial movement corridor for San Joaquin kit fox (USFWS 1998) or other terrestrial wildlife species and no sign of the species has been detected during surveys (Appendices E3 and E5). Transit of the site by this species is considered unlikely.

There is no existing significant cumulative impact on wildlife movement, and the incremental impacts of the Project, in combination with other present and reasonably foreseeable future projects in the cumulative scenario, would not cause one. Therefore, the Project would have a less-than-significant impact for criterion d). (*Less-than-Significant Impact*)

Mitigation: None required.

Criterion e)

Impact 3.5-3c: The Heartland Solar Project could cause or conflict with a significant cumulative effect due to a conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (*Less than Significant with Mitigation Incorporated*)

In light of the cumulative environmental condition, which reflects the ongoing impacts of past projects and which is described in Section 3.5.1.1, *Environmental Setting*, and the combined impacts of projects identified in Table 3.1-1 in Section 3.1.3, *Cumulative Effects Approach*, and the incremental impact of the Heartland Solar Project, there would be no significant adverse cumulative impact due to conflict with any local policies or ordinances protecting biological resources. Unless reduced by **Mitigation Measures 3.5-1 through 3.5-3**, the Project's incremental impact could combine with the incremental impacts of other cumulative projects to cause a significant cumulative effect. As with the Project, other cumulative projects would be expected to implement similar mitigation measures to avoid and minimize impacts on special status species and their habitat. The Heartland Solar Project by itself would not cause a significant conflict with local ordinances and, in combination with other present and reasonably foreseeable future projects in the cumulative scenario, would not cause one. As a result, impacts would be less than significant.

Mitigation: Implement Mitigation Measures 3.5-1, 3.5-2, and 3.5-3.

Significance after mitigation: Less than significant for the reasons described above.

Criterion f)

As analyzed in Section 3.5.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause no impact due to a conflict with the provisions of an adopted HCP, NCCP, or other approved

local, regional, or state habitat conservation plan. Therefore, the Project could not cause or contribute to any cumulative impact relating to criterion f). (*No Impact*)

Mitigation: None required.

3.5.4.2 Cumulative Effects of the PG&E Components

Impact 3.5-4c: The PG&E Components could contribute to cumulative effects on biological resources. (*Less-than-Significant Impact*)

The incremental impact of PG&E Components on biological resources would combine with the incremental impacts of the projects identified in Table 3.1-1 in Section 3.1.3, *Cumulative Effects Approach*, including 16 solar facilities, 6 additional energy facilities, and 4 other projects (agricultural and aviation) in the local area. All of these projects would cause impacts that could combine with those of the PG&E Components to cause or contribute to a cumulative impact on nesting birds. The PG&E Components would incrementally contribute to the cumulative impact on migratory birds by increasing collision and electrocution risk of the Project site; however, with application of PG&E **CMs BIO-1 and BIO-2**, the incremental contribution would not be cumulatively considerable (i.e., would be less than significant) in the context of other projects, because the cumulative impact as a whole would not contribute to a population-level loss of migratory birds.

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kV gen-tie line extending from the off-site pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station; the upgrades within the existing station footprint would not substantially change existing conditions with regard to bird flight, and would not be expected to affect any other biological resources.

Installation of new power poles and 1,000-foot gen-tie line outside the footprint of the proposed Heartland Solar Project facility would have potential to harm nesting Swainson's hawk and other nesting migratory birds, and to increase the risk of collision and electrocution to birds and bats. However, PG&E **CMs BIO-3 and BIO-4** would be applied to reduce harm to nesting birds from the PG&E Components. The resulting impact would not be cumulatively considerable (i.e., less than significant).

Regarding collision and electrocution risk from the gen-tie line, PG&E **CMs BIO-1 and BIO-2** would ensure adherence to current APLIC design standards to minimize the potential for avian injury and mortality from collisions and electrocution and, as proposed, would keep potential impacts to a less-than-significant level.

The incremental impacts of the PG&E Components, in combination with the incremental impacts of closely related past, present, and reasonably foreseeable future projects, could combine to cause a significant cumulative impact. However, the incremental contribution of the PG&E

Components (as proposed and including PG&E **CMs BIO-1, BIO-2**, **BIO-3**, and **BIO-4**) would not be cumulatively considerable (less than significant).

Mitigation: None required.

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3.6 Cultural Resources and Tribal Cultural Resources

This section identifies and evaluates issues related to cultural resources and tribal cultural resources, including archaeological, historic built architectural, and tribal cultural resources. It describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project).

Fresno County (the County) received scoping comments from the Santa Rosa Rancheria Tachi-Yokut Tribe on November 17, 2022. The Santa Rosa Rancheria requested that an archaeological study be completed for the Project including a records search, survey, Sacred Lands File search, and requested that prior to construction the crew receive a cultural presentation, to have an archaeological and Native American monitor during ground disturbance, and to have salt grass included in the revegetation seed mix (Appendix A, *Scoping Report*).

3.6.1 Setting

3.6.1.1 Study Area

The study area for purposes of this analysis of potential impacts on cultural resources and tribal cultural resources includes the areas of potential ground disturbance within the Project site, both horizontally (up to 2,370 acres) and vertically (up to a depth of 50 feet). A cultural resources records search was completed with a 0.5-mile radius around the Project site to support analysis of the sensitivity of the Project site for cultural resources.

3.6.1.2 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 approximately 20,000 square miles. 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, while the San Joaquin Valley lies to the south (Rosenthal et al. 2007).

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, which wintered on the plains, as well as jackrabbits, ground squirrels, and quail (Wallace 1978a).

Pre-contact Setting

The Central Valley pre-contact record is divided into three periods: Paleo-Indian (11,550 to 8,550 cal B.C.[1]), Archaic (8,550 cal B.C. to cal A.D. 1100), and Emergent (cal A.D. 1100 to Historic). The Archaic period is further divided into three sub-periods: Lower Archaic (8,550 to 5,550 cal B.C.), Middle Archaic (5,550 to 550 cal B.C.), and Upper Archaic (550 cal B.C. to cal A.D. 1100) (Rosenthal et al. 2007).

Paleo-Indian (11,550 to 8,550 cal B.C.)

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 have been found in three San Joaquin Valley areas: Tracy Lake, the Woolfsen mound, and the Tulare Lake basin. The closest of these locations is the Tulare Lake Basin, which is approximately 40 miles to the southeast. Little other evidence of human occupation during the Paleo-Indian period is available for the Central Valley.

Lower Archaic (8,550 to 5,550 cal B.C.)

Lower Archaic occupation of the Central Valley is known mainly from isolated finds located along the ancient shorelines of lakes. Very little archaeological evidence exists for occupation of the valley floor during the Lower Archaic.

Middle Archaic (5,550 to 550 cal B.C.)

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 (550 cal B.C. to cal A.D. 1100)

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 millingslabs remained dominant (Rosenthal et al. 2007).

Emergent (cal A.D. 1000 to 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 (circa A.D. 1500 to 1850), has been fully identified (Moratto 1984).

[1] The “cal” prefix indicates that the date reported is the result of radiocarbon calibration using tree ring data.

Ethnographic Setting

At the time of European contact, the Central Valley was occupied by speakers of the California Penutian language family, specifically the Yokuts. Historically, Yokuts have been divided into three cultural-geographical groupings: Northern Valley, Southern Valley, and Foothills (Arkush 1993). Based on what has been written about the territorial boundaries among these three cultural-geographical groupings, the Project area is within the ancestral land boundaries (southwestern portion) of the Northern Valley Yokuts and 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).

Historic Setting

Widespread exploration of the Central Valley by non-native American peoples began in the early 1800s when Lieutenant Gabriel Moraga led a Spanish contingent over Pacheco Pass and into the valley; however, no permanent Spanish settlements were established in the San Joaquin Valley (CAGenWeb 2013).

One of the earliest Spanish trails, known as El Camino Viejo (The Old Road), ran north-south through the San Joaquin Valley extending from San Pedro to San Antonio (present-day East Oakland). The trail followed the path of a pre-contact trail and skirted the eastern slope of the Coast Range foothills (about 4 miles east of the Project site). El Camino Viejo was an alternative route to heavily traveled El Camino Real (the Royal Road) and was often the preferred route of those wishing to travel without the knowledge of the Spanish government. The trail became a stagecoach and mail route and also an important route for cattle ranchers. In the valley, the route largely corresponds to modern-day Interstate 5 (Hoover et al. 1990).

Mexico gained independence in 1821 and began secularization of the missions and promoting settlement of Alta California through the issuance of land grants and liberal colonization laws, which did not prevent foreigners from settling in Mexican territory. This allowed for a significant number of Euro-Americans to gain a foothold in Alta California. In an attempt to prevent continued foreign incursion and promote a greater Mexican presence in the interior, Mexico issued the 1840 Law of Colonization and encouraged the establishment of cattle ranches in the Central Valley; however, few Mexican land grants were issued in the San Joaquin Valley and only two that included parts of Fresno County (Hoover et al. 1990; Shumway 2007 [1941]).

In 1848, gold was discovered at Sutter's Mill resulting in a large influx of immigrants hoping to make their fortunes. After cessation of the Mexican-American War in the same year, California was ceded to the United States, officially becoming a state in 1850. Mexico's public lands became United States public lands and were surveyed, sectioned, and made available for sale/ settlement (Hoover et al. 1990; Shumway 2007 [1941]; State Lands Commission 1982).

The federal government passed legislation in the mid-1800s to promote settlement of the western United States and dispose of surplus public land. The Homestead Act of 1862 allowed settlement of public lands, requiring only residence, improvement, and cultivation of the land. A claim for a 160-acre parcel could be made by anyone who was over the age of 21, head of a household, and paid an $18 fee. The act allowed single women, former slaves, and new immigrants an opportunity to own land, provided they improved and lived on the land for 5 years. While these laws were designed to give individual settlers and families access to land ownership, many land speculators and farmers/ranchers manipulated them to obtain huge tracts of land for little cost, particularly in the San Joaquin Valley. The railroads also benefited from federal laws, which granted alternating odd-numbered sections within 20 miles of a projected rail line to facilitate rail expansion (Caltrans 2007; Orsi 2005).

Fresno County was organized in 1856 from a portion of Mariposa County. The development of the Central Pacific Railroad through the County in 1872 resulted in the creation of the town of Fresno, which became the County seat in 1874. The original County seat was in Millerton, 25 miles north of Fresno, but the decision was made to move the County seat south to gain access to the railroad (Hoover et al. 1990).

With the waning of the mining industry in the mid-1860s, many turned to raising cattle and sheep in the valley, including many Basque and Portuguese immigrants who had been shepherds in their native land (Graves 2004; Miller 2013). Sheep primarily were herded on the uninhabited west side, feeding on wild alfalfa or rented to stubble land.

After the decline of the cattle industry in the 1870s, the grain industry rose to prominence. In 1889, the San Joaquin Valley wheat crop topped 40 million bushels, the largest crop in the United States except that produced by the entire state of Minnesota. Over the ensuing years, a failure to rotate crops depleted the soil and yields decreased. This, coupled with a drop in grain prices and the advancement of irrigation, opened up the opportunity for viticulture and other horticultural pursuits to expand (Ryan and Breschini 2010; Vandor 1919). During the latter part of the 19th century, agricultural colonies contributed heavily to the growth of Fresno County. These colonies established numerous extensive canal systems to provide water to the region's farmers (Hattersley-Drayton 2009).

The early 1900s saw the rise of the dairy farmer in the San Joaquin Valley (Caltrans 2007). The decline of the wool industry from the 1880s-1900s left many San Joaquin Valley Portuguese sheepherders unemployed and many turned to the growing dairy farming. Most began as milk hands, saving income until they could start their own dairy farms. By the 1930s, Portuguese dairy farms were well established in the valley (Graves 2004).

In the mid-1930s, the Great Depression, drought, and poor economic and agricultural conditions in the southern and plains states led to a mass migration of *Dust Bowl refugees* to California. Approximately 300,000-400,000 migrants from Oklahoma, Texas, Arkansas, Missouri, and other states moved to California, drawn by the promise of employment and a better life (Gregory n.d.). Many ended up in the San Joaquin Valley to work as field hands; by 1950, as many as one in four residents of the San Joaquin Valley had emigrated from Oklahoma, Texas, Arkansas, or Missouri (Gregory 1989).

Today, a wide variety of agricultural enterprises exist in the San Joaquin Valley, with farms ranging from small to large industrial operations and producing crops such as fruits, nuts, barley, beans, corn, hay, beets, wheat, and cotton. Livestock, including cattle and poultry, continues to be raised in the San Joaquin Valley (Caltrans 2007).

3.6.1.3 Regulatory Setting

Federal

National Register of Historic Places

The National Register of Historic Places (NRHP) was established by the National Historic Preservation Act (NHPA), 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 [CFR] Section 60.2). The NRHP recognizes both historical-period and pre-contact 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, along with being at least 50 years old and possessing integrity to convey its significance (CFR Title 36, Section 60.4):

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.

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 (CRHR).

American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 protects the rights of Native Americans to freedom of expression of traditional religions (24 United States Code Section 1996). This act established "the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions… including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites."

State

California Register of Historical Resources

Created in 1992 and implemented in 1998, the 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, defined as a building, site, structure, object, historic district (including contributing resources), is generally considered to be historically significant under CEQA if it meets at least one of the four criteria for listing in the CRHR (see Public Resources Code Section 5024.1, Title 14 California Code of Regulations [Cal. Code Regs.], Section 4852), and retains sufficient integrity to reflect its historical significance. The four criteria for listing in the CRHR include:

1. It is associated with events that have made a significant contribution to the broad patterns of local or reginal history, or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
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 to the prehistory or history of the local area, California, or the nation.

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.

As with traditional cultural properties in the NRHP, identification of tribal cultural resources for the CRHR emphasizes a place or feature's value and significance to living communities. AB 52, summarized below, further clarified this designation process.

California Environmental Quality Act

A project has a significant effect on the environment if it causes a substantial adverse change in the significance of an historical resource (Public Resources Code Section 21084.1). The CEQA Guidelines (14 Cal. Code Regs. 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 Public Resources Code Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of Public Resources Code Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript 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 Public Resources Code Section 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, then the provisions of Public Resources Code 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 Cal. Code Regs. Sections 15064.4[b][1] and 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 Public Resources Code Section 21083. As defined in Public Resources Code 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.
- Is directly associated with a scientifically recognized important pre-contact or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in Public Resources Code 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, then the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Public Resources Code Section 21083.1[a]). If preservation in place is not feasible, mitigation measures 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 Cal. Code Regs. Section 15064.4[c][4]).

Public Resources Code

Assembly Bill (AB) 52, enacted in September 2014, amended CEQA to explicitly recognize that California Native American tribes have expertise with regard to their tribal history and practices. AB 52 established a category of cultural resources known as tribal cultural resources in order to consider tribal cultural values when determining impacts on cultural resources. Public Resources Code Section 21074(a) defines a *tribal cultural resource* as any of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
  - included or determined to be eligible for inclusion in the California Register; or
  - included in a local register of historical resources, as defined in Public Resources Code Section 5020.1(k).[2]
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code Section 5024.1(c).[3] In applying these criteria, the lead agency would consider the significance of the resource to a California Native American tribe.
- A cultural landscape that meets the criteria of Public Resources Code Section 21074(a)[4] also is a tribal cultural resource if the landscape is geographically defined in terms of the size and scope.
- An historical resource as described in Public Resources Code Section 21084.1,[5] a *unique archaeological resource* as defined in Section 21083.2,[6] or a *non-unique archaeological resource* as defined in Section 21083.2[7] may also be a *tribal cultural resource* if it meets the criteria of Section 21074(a).

AB 52 requires lead agencies to analyze project impacts on tribal cultural resources separately from archaeological resources (Public Resources Code Sections 21074 and 21083.09), in recognition that archaeological resources have cultural values beyond their ability to yield data important to prehistory or history. AB 52 also defines *tribal cultural resources* in Public

2 Public Resources Code section 5020.1(k) defines *local register of historical resources* as "a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution."

3 The criteria set forth in Public Resources Code section 5024.1(c) include whether a resource: "(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. (2) Is associated with the lives of persons important in our past. (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values. (4) Has yielded, or may be likely to yield, information important in prehistory or history."

4 A cultural landscape meets the criteria of Public Resources Code section 21074(a) if it either is "included or determined to be eligible for inclusion in the California Register of Historical Resources" or is "included in a local register of historical resources" pursuant to section 5020.1(k).

5 Public Resources Code section 21084.1 defines an *historical resource* as "a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources."

6 Public Resources Code section 21083.2(g) defines *unique archaeological resource* as "an archaeological artifact, object, or site about 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: (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information. (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type. (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person."

7 Public Resources Code section 21083.2(h) defines *nonunique archaeological resource* as "an archaeological artifact, object, or site which does not meet the criteria in subdivision (g)."

Resources Code Section 21074 (see above) and requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (Public Resources Code Sections 21080.3.1, 21080.3.2, and 21082.3).

Native American Heritage Commission

The Native American Heritage Commission (NAHC) identifies and manages a catalog of places of special religious or social significance to Native Americans. This database, known as the Sacred Lands File, is a compilation of information on known graves and cemeteries of Native Americans on private lands and other places of cultural or religious significance to the Native American community. The NAHC also performs other duties regarding the preservation and accessibility of sacred sites and burials and the disposition of Native American human remains and burial items.

Public Resources Code Sections 5097.9 through 5097.991 describe the duties and role of the NAHC and requires the cooperation of State and local agencies in carrying out their duties with respect to Native American resources.

Health and Safety Code, Sections 7052 and 7050.5

Section 7052 of the Health and Safety Code states that the disturbance of Native American cemeteries is a felony. Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the NAHC.

Other Relevant State Regulations

Sections of the Public Records Act (Government Code Sections 6254[r] and 6254.10), Health and Safety Code (Section 7050.5), Penal Code (Section 622.5), and Public Resources Code (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.

Local

Fresno County 2024 General Plan

The Open Space and Conservation Element of the Fresno County General Plan contains several objectives and policies relevant to the protection of potential cultural resources within the Project site and 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 within the County (Fresno County 2024).

> **Goal OS-J:** To identify, protect, and enhance Fresno County's important historical, archeological, paleontological, geological, and cultural sites and their contributing environment, and promote and encourage preservation, restoration, and rehabilitation of Fresno County's historically significant resources in order to promote historical awareness,

community identify, and to recognize the county's valued assets that have contributed to past county events, trends, styles of architecture, and economy.

Policy OS-J.1: Preservation of Historic Resources. The County shall encourage preservation of any sites and/or buildings identified as having historical significance pursuant to the list maintained by the Fresno County Historic Landmarks and Records Advisory Commission.

Policy OS-J.2: Historic Resources Consideration. The County shall consider historic resources during preparation or evaluation of plans and discretionary development projects that may impact buildings or structures. For a project projected on a property that includes buildings, structures, objects, sites, landscapes, or other features that are 45 years of age or older at the time of permit application, the project applicants shall be responsible for preparing and implementing the recommendations of a historical resources evaluation completed by qualified cultural resources practitioners.

Policy OS-J.3: Minimize Impacts. Whenever a historical resource is known to exist on a proposed project site, the County (i.e., Fresno County Historic Landmarks and Records Advisory Commission) shall evaluate and make recommendations to minimize potential impacts to said resources.

Policy OS-J.4: Cultural Resources Protection and Mitigation. The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archeological, tribal, paleontological, and cultural sites and resources. For projects requiring ground disturbance and located within high or moderate cultural sensitivity areas, a cultural resources technical report may be warranted, including accurate archival research and site surveys conducted by qualified cultural resources practitioners. The need to prepare such studies shall be determined based on the tribal consultation process and initial outreach to local or state information centers.

Policy OS-J.5: Archeological Sites Confidentiality. The County shall, within the limits of its authority and responsibility, maintain confidentiality regarding the location of archeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

Policy OS-J.6: Native American Consultation. 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.

Policy OS-J.7: Historical Sites Inventory. The County shall maintain an inventory of all sites and structures in the county determined to be of historical significance (Index of Historic Properties in Fresno County).

Policy OS-J.10: Cultural Resource Preservation. The County shall use the State Historic Building Code and existing legislation and ordinances to encourage preservation of cultural resources and their contributing environment.

3.6.1.4 Cultural Resources and Tribal Cultural Resources Identified within the Project Site and Surrounding Area

Identification of Known Cultural Resources

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, an affiliate of the State of California Office of Historic Preservation, is the official state repository of cultural resource records and reports for Fresno County. Staff at the SSJVIC conducted the records search at the request of Environmental Science Associates (ESA; Records Search File No.: 22-136). 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).
- Built Environment Resources Directory for Fresno County (California Office of Historic Preservation, as of September 2022).
- Archaeological Determinations of Eligibility for Fresno County (California Office of Historic Preservation, as of 2013).

Historic research also was performed to better understand the history of land use of the Project site. This research consisted of reviewing historic literature, topographic maps, general land office plats and federal land patents, and aerial imagery. SSJVIC records indicate that nine previous technical studies have been performed that were within or intersected portions of the Project site.

There is one (P-10-007201) previously recorded pre-contact isolated archaeological resource recorded within the Project site and four (P-10-007199, P-10-007200, P-10-007202, P-10-0070203) previously recorded pre-contact isolated archaeological resources within a 0.5-mile radius. All of these isolated artifacts were recorded during the survey for the Luna Valley Solar Project, which has been approved and will be constructed just south of the Project site. Tetra Tech evaluated these isolates for the CRHR and recommended that none of the isolates are eligible for inclusion (Farrell 2020). ESA concurs with these evaluations and the resources are not considered historical resources or unique archaeological resources for the purposes of CEQA.

There are no previously recorded historic-era built environment resources recorded within the Project site and four (P-10-005796, P-10-005797, P-10-006614, P-10-007240) previously recorded historic-era built environment resources within a 0.5-mile radius. P-10-005796 and P-10-005797 are canals that connect to Fresno Slough. P-10-006614, Panoche-Kearney 230 kV Transmission Line, is approximately 100 feet above the southern end of the Project site, where the proposed generation-tie line would connect the Project to the Tranquillity Switching Station. The site record for this resource includes an NRHP and CRHR evaluation and recommends that it

is not eligible for listing in either register. ESA concurs with this evaluation and the resource is not considered a historical resource for the purposes of CEQA.

Native American Contact

Fresno County maintains a list for AB 52 consultation that includes four Tribes: Table Mountain Rancheria, Santa Rosa Rancheria Tachi-Yokut Tribe, Dumna Wo Wah, and Picayune Rancheria of Chukchansi Indians. Letters to the Tribes were mailed on April 19, 2022. No Tribes responded to the consultation letters within 30 days. On October 24, 2022, the County published the NOP and it was sent to the four Tribes that are on the County's AB 52 list. On November 11, 2022, Santa Rosa Rancheria Tachi-Yokut Tribe responded and requested that an archaeological study be completed for the Project including a records search, survey, Sacred Lands File search, and requested that prior to construction the crew receive a cultural presentation, to have an archaeological and Native American monitor during ground disturbance, and to have salt grass included in the revegetation seed mix (Santa Rosa Rancheria 2022).

Additionally, ESA contacted the NAHC on November 18, 2022, to request a search of the Sacred Lands File. The NAHC responded December 15, 2022, that the search failed to identify any Native American resources in or near the Project site and provided a list of 17 individuals and organizations from 12 tribes to contact that may have additional information (NAHC 2022).

Archaeological Field Surveys

ESA conducted a pedestrian field survey of the Project site between April 11 and April 14, 2022. The archaeological crew surveyed the entire Project site utilizing transects spaced 30 meters wide. In areas of poor ground surface visibility, the field crew periodically stopped along transects to clear debris and ground cover to inspect exposed ground surface for cultural materials, changes in soil color and texture, or other evidence of previous human occupation. The Project site consisted of open, tilled (row crops) agricultural fields. Ground surface visibility was excellent (95 percent or greater) throughout most of the survey area. The area is actively mechanically plowed and grazed by sheep, and several sheep bones and a few carcasses were observed in the Project site (Sims 2022).

The proposed generation-tie line area was included in the survey conducted by Tetra Tech for the Luna Valley Solar Project in 2020 (Farrell 2020) and was not re-surveyed specifically for this Project.

The pedestrian survey of the remainder of the Project site resulted in the identification of four isolated finds: three pre-contact (lithic debitage and possible mano fragments) and one historic (domestic refuse). The pre-contact isolates include: one chert primary flake and two possible mano fragments. The historic isolate consists of a potentially modified fragment of colorless glass (Sims 2022). All the isolates were in a plowed field and lacked any archaeological context.

Due to the limited amount of information isolates can provide and their lack of associated context, isolated artifacts are typically not considered eligible for listing in the CRHR; they also are not considered historical resources or unique archaeological resources under CEQA. These isolated finds are not known to be directly associated with events or people that have had a broad-

reaching impact on the community at the local, state, or national level (CRHR Criteria 1 and 2), nor do they embody the characteristics of a distinctive type, period, or method of construction, or represent the work of a master (Criterion 3). Finally, because isolated artifacts, by their nature, lack important archaeological context, they do not have the potential to yield information important to an understanding of the prehistory or history of the local area, the state, or the nation (Criterion 4). Therefore, all identified isolated are recommended not eligible for inclusion in the CRHR and are not considered historical resources. Additionally, none of these resources meet the criteria under Public Resources Code Section 21083.2 and therefore are not considered unique archaeological resources.

Potential for Unknown Buried Cultural Resources

The ground surface of the Project site has been highly disturbed by previous agricultural activities. The United States Geological Survey characterized deposits in the region as Quaternary basin and fan deposits. No major rivers, streams, or drainages flow through the Project site. Many of the existing waterways within and in the vicinity of the Project site are modern irrigation channels built to bring water to this arid area.

Geoarchaeological sensitivity analysis presented in *Geoarchaeological Overview and Assessment of Caltrans Districts 6 and 9* (Meyer et al. 2010) provides a broad overview of geoarchaeological information for Fresno, Kern, Kings, Madera, Tulare, Inyo, and Mono Counties. Meyer and colleagues reviewed the Soil Survey Geographic Database and the State Soils Geographic Database and compiled previously reported radiocarbon dates, analyses of landform superposition, and field examinations of stratigraphic relationships. They constructed a regional model to predict archaeological site locations based on two environmental factors – proximity to water and landform slope. The model assumes that human activity in the past, and therefore archaeological site formation, occurred more frequently in flat areas close to water sources, such as rivers, lakes, and springs. Compared with sloped landforms, flat landforms would be expected to be more attractive for occupation, as well as being less susceptible to gravity-driven processes such as landslides capable of destroying archaeological deposits.

While the potential for buried pre-contact archaeological deposits in neighboring regions has been characterized as moderate by Meyer et al. (2010), such broad analyses must be tempered by local conditions. The Project site is located in an area that has a sparse record of pre-contact occupation, as supported by the records search and results of the pedestrian survey. While there have been isolated archaeological materials found in and around the Project site, all these resources are isolated artifacts spread across four miles and do not represent a significant concentration of artifacts or cultural resources. Moreover, while agricultural fields extensively disturb archaeological deposits, they do not erase them; to the contrary, such activities often bring buried deposits to the surface. No such deposits were identified in the Project site during the surface surveys. As such, the Project site is characterized as having a low potential for discovering significant archaeological deposits. Nevertheless, there is some possibility that buried archaeological deposits may be encountered during Project-related excavation.

Evidence of historic-era agriculture and irrigation have been documented near the Project site, however these resources are mostly built-environment resources and there have been little to no geological or alluvial processes that would bury these resources. Therefore, any such resources would likely be on the surface and have been identified during pedestrian surveys, which have covered the entirety of the Project site. The records search identified two historic-era canals, and two electrical lines within 0.5 mile of the Project area. No historic-era resources were identified in the Project site as a result of the records search and the pedestrian survey. A historic aerial and map imagery review did not identify any extant structures or features previously constructed within the Project site besides the road and canals alignments and the one concrete pad at the southwest corner of Section 1 that would be 45 years or older (Sims 2022). The pedestrian survey did not identify any evidence of the other buildings that were documented on historic maps and aerials in this area and no historic-era artifacts were identified around the concrete pad. Based on this review, the potential for presence of unrecorded, or previously unknown, historic-era archaeological resources is low.

Therefore, this analysis concludes that the Project site's sensitivity for pre-contact and historic-era archaeological resources is low.

3.6.2 Significance Criteria

The Project would result in significant impacts to cultural resources or tribal cultural resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5;

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;

c) Disturb any human remains, including those interred outside of formal cemeteries.

d) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

   i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or

   ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code Section 5024.1(c). In applying the criteria set forth in Public Resources Code Section 5024.1(c), Fresno County, as the CEQA lead agency, has considered the significance of the resource to a California Native American tribe.

According to CEQA Guidelines Section 15064.5, a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment (14 Cal. Code Regs. Section 15064.5[b]). The CEQA Guidelines further state that a substantial adverse change in the significance of a resource means

the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historic resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of Public Resources Code Sections 5020.1(k) and 5024.1(g). A lead agency must also take into account impacts on unique archaeological resources.

3.6.3 Direct and Indirect Effects

3.6.3.1 Methodology

To evaluate the Project's potential effects on significant cultural resources and tribal cultural resources, including pre-contact and historic archaeological sites, a cultural resources characterization and evaluation of the Project site was undertaken. This included a literature review, a Native American outreach program, geoarchaeological review, and field survey for areas of potential permanent and temporary impacts where facilities would be installed (Sims 2022). The purpose of this evaluation was to identify any cultural resources and tribal cultural resources that may be present within the Project site. Additionally, under AB 52, Fresno County engaged in consultation with local tribes (described above) to solicit input on potential tribal cultural resources within, or in proximity to, the Project site.

Impacts on cultural resources and tribal cultural resources could result from Project-related ground-disturbing activities, including excavation, grading, trenching, vegetation clearance, the operation of heavy equipment, or other surface and sub-surface disturbance that could damage or destroy surficial or buried archaeological resources, including pre-contact and historic materials or human burials.

3.6.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.

Criterion b) Whether the Project would cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.

Construction of the Heartland Solar Project would not affect known historical or unique archaeological resources, because there are no resources meeting CEQA's definition of a historical resource or unique archaeological resource known to be located within the Project site. Therefore, the Project would result in no impact on known historical or unique archaeological resources. (*No Impact*)

Mitigation: None required.

Impact 3.6-1: Ground disturbing activities associated with the Heartland Solar Project could cause a substantial adverse change in the significance of a newly-discovered historical or archaeological resource, as defined in CEQA Guidelines Section 15064.5. ***(Less than Significant with Mitigation Incorporated)***

Construction of the Heartland Solar Project could impact previously unknown, buried archaeological resources. According to the geoarchaeological review, the Heartland Solar Project site has low sensitivity for buried archaeological resources based on the geomorphology, proximity to water, and landform slope. The lack of nearby water sources, particularly, suggests long-term habitation sites are unlikely. Nonetheless, given that the general vicinity is covered by Holocene basin and fan deposits, which have been deposited over the course of known human occupation in the region, there is a possibility that the deposition of soils has buried pre-contact archaeological sites that once existed on the surface. Therefore, although overall there is a low probability of significant pre-contact resources existing within the proposed solar facility, there nevertheless exists the possibility that buried archaeological resources may be encountered during ground disturbing activities.

If unknown archaeological resources are discovered during ground-disturbing activities required for construction or operation and maintenance, significant impacts could occur. With the implementation of **Mitigation Measure 3.6-1: Cultural Resources Awareness Training**, which requires the retention of a qualified archaeologist and cultural resources awareness training, and **Mitigation Measure 3.6-2: Inadvertent Discovery of Cultural Resources**, which governs procedures in the event of inadvertent discovery of archaeological materials, impacts to any newly-discovered historical or unique archaeological resources would be mitigated to less than significant.

Decommissioning and reclamation of the Heartland Solar Project and restoration of the Heartland Solar Project site would not impact historical or unique archaeological resources. Ground disturbance associated with these activities would occur within soils previously disturbed by construction and subject to **Mitigation Measures 3.6-1 and 3.6-2**. Therefore, no impact on historical and unique archaeological resources would result from decommissioning.

Mitigation Measure 3.6-1: Cultural Resources Awareness Training

The Heartland Solar Project owner shall retain a Secretary of Interior qualified Project Archaeologist(s) to carry out all mitigation measures related to archaeological and historical resources during construction of their respective project components.

Prior to the start of any ground-disturbing activities, the Heartland Solar Project owner shall ensure that the qualified archaeologist(s) has prepared and conducted a Cultural Resources Awareness Training for all construction personnel working on the Project. A Native American-designated representative from the Santa Rosa Rancheria Tachi-Yokut Tribe will be invited to attend and provide a Tribal perspective regarding tribal cultural resources for the training. The lead archaeologist will present the initial briefing of the cultural resources sensitivity training at the construction orientation program given to all personnel working on the proposed Project. The Project proponent/operator shall ensure all new employees or on-site workers who have not participated in earlier cultural resources sensitivity training will receive the training prior to working on the construction site. A copy of the cultural resources sensitivity training guide/materials shall be kept on-

site and available for all personnel to review and become familiar with as necessary. The training shall include:

- An overview of applicable laws and penalties pertaining to disturbing or collecting cultural resources.
- A brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, and potential cultural resources that could be encountered during ground disturbing activities to facilitate worker recognition.
- Instruction that workers will halt construction in the event of a cultural resource inadvertent discovery (see Mitigation Measure 3.6-2), and notification procedures of Project personnel (i.e., Project Archaeologist, and others as appropriate including the PG&E Cultural Resource Specialist if the resource is located within the PG&E scope components).
- Roles and responsibilities of the Project Archaeologist and Archaeological and Tribal Monitors (see Mitigation Measure 3.6-2).

A sign-in sheet shall be completed, retained by the Heartland Solar Project construction contractor for the duration of Heartland Solar Project construction to demonstrate attendance at the awareness training, and provided to the County upon the completion of Project construction (as appropriate).

Mitigation Measure 3.6-2: Inadvertent Discovery of Cultural Resources

In the event archaeological materials are encountered during Heartland Solar Project activities, the Heartland Solar Project construction contractor shall immediately cease any ground disturbing activities within 100 feet of the find. The Project Archaeologist, in coordination with the Native American-designated representative from the Santa Rosa Rancheria Tachi-Yokut Tribe and the PG&E Cultural Resource Specialist (as appropriate), shall evaluate the significance of the resources for California Register of Historical Resources eligibility and recommend appropriate treatment measures to the County and the Applicant. Per CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the Project Archaeologist shall, in coordination with a Native American-designated representative from the Santa Rosa Rancheria Tachi-Yokut Tribe and the PG&E Cultural Resource Specialist (as appropriate), develop additional treatment measures in consultation with the County, which may include data recovery or other appropriate measures. The County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are pre-contact, tribal cultural resources, or Native American in nature. The Project Archaeologist shall prepare a report documenting evaluation and/or additional treatment of the resource. A copy of the report shall be provided to the County and to the Southern San Joaquin Valley Information Center. Construction can recommence based on direction of the Project Archaeologist with the County's agreement.

Significance after Mitigation: Less than significant. The implementation of Mitigation Measure 3.6-1 and Mitigation Measure 3.6-2 would reduce the impact to a less-than-significant level because if any cultural resources are identified during Project construction within the Project site, these measures establish a plan to evaluate the resource for eligibility and, if necessary, prepare a treatment plan to minimize impacts to the resource.

Criterion c) Whether the Project would disturb any human remains, including those interred outside of formal cemeteries.

Impact 3.6-2: Ground disturbing activities associated with the Heartland Solar Project could result in damage to previously unidentified human remains. ***(Less than Significant with Mitigation Incorporated)***

As described above, there is no indication that the Heartland Solar Project site has been used for human burial purposes in the recent or distant past. However, in the event that human remains are discovered, including those interred outside of formal cemeteries, the human remains could be inadvertently damaged, which would be a significant impact for the purposes of CEQA. Implementation of **Mitigation Measure 3.6-3: Inadvertent Discovery of Human Remains** would ensure that any human remains encountered are appropriately addressed, thus reducing any potential impacts to a less-than-significant level.

Operation and maintenance of the Heartland Solar Project would cause no impact on human remains because no ground disturbance would occur at depths greater than those reached during construction.

Decommissioning and site reclamation activities similarly would not impact human remains. Ground disturbances associated with these activities would occur within soils previously disturbed by construction and subject to **Mitigation Measure 3.6-3**. Therefore, no impact on human remains would result.

Mitigation Measure 3.6-3: Inadvertent Discovery of Human Remains

Existing law (Health and Safety Code Section 7050.5) requires that if human remains are uncovered during Heartland Solar Project activities, the Heartland Solar Project construction contractor shall immediately halt work within 100 feet of the find, immediately contact the Fresno County Coroner to determine whether the remains are subject to the coroner's authority, and adhere to the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e)(1 and 2), as applicable. If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c), and Public Resources Code Section 5097.98 (as amended). The NAHC shall designate a Most Likely Descendant (MLD) for the remains per Public Resources Code Section 5097.98, and in accordance with generally accepted cultural or archaeological standards or practices, the landowner shall ensure that the immediate vicinity of the Native American human remains, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the MLD regarding their recommendation for the disposition of the remains, taking into account the possibility of multiple human remains.

Significance after Mitigation: Less than significant. Existing state laws regarding proper handling of previously unknown human remains encountered during construction are specified above and the Project owner's compliance with these independently enforceable laws would avoid significant impacts on human remains. In conjunction with the training and monitoring protocols identified in Mitigation Measures 3.6-1 and 3.6-2, potential impacts to unknown human remains is less than significant.

Criterion d) Whether the Project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code Section 5024.1(c). In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Impact 3.6-3: Ground-disturbing activities associated with the Heartland Solar Project could cause a substantial adverse change to a tribal cultural resource, as defined in Public Resources Code Section 21074(a). ***(Less than Significant with Mitigation Incorporated)***

As noted above in the *Native American Contact* section, a tribal consultation letter from the Santa Rosa Rancheria Tachi-Yokut Tribe requested the crew receive a cultural presentation prior to construction, that to have an Archaeological and Native American monitor be present during ground disturbance, and that salt grass be included in the revegetation seed mix. The results of the records search conducted at the SSJVIC identified four pre-contact archaeological isolates within 0.5-mile of the Heartland Solar Project site, and five pre-contact archaeological isolates have been identified during field survey (ESA 2022; Farrell 2020). A letter from the NAHC stated that a review of the Sacred Lands File failed to identify any Native American resources in the vicinity of the Project.

In light of the nature of the Heartland Solar Project and the disturbed character of the Heartland Solar Project site, tribal cultural resources, if present, are anticipated to be subsurface pre-contact archaeological resources, potentially including human remains. However, as further described above, no such subsurface pre-contact resources have been documented within, or in the immediate vicinity of, the Project site. If not discovered prior to development, such resources could be damaged or destroyed through earthwork, ground disturbance, or other subsurface construction activities. Damage to or loss of tribal cultural resources would be a potentially significant impact. Implementation of **Mitigation Measures 3.6-1**, **3.6-2**, **3.6-3**, and **3.6-4** would ensure that any encountered archaeological resources at the Project site that are considered tribal cultural resources would be appropriately addressed, thus reducing any potential impacts to a less-than-significant level.

Operation, maintenance, and decommissioning of the Heartland Solar Project would cause no impact to tribal cultural resources.

> **Mitigation Measure 3.6-4:** In addition to implementing Mitigation Measures 3.6-1, 3.6-2, and 3.6-3, the Project owner shall retain a Secretary of the Interior (SOI)-qualified Project Archaeologist to prepare and implement a Cultural Resource Monitoring Plan (Plan) and coordinate and schedule archaeological monitoring during Project construction. The plan will be submitted to the County for review and approval. The plan will include a

requirement for monitoring, as determined by the Project Archaeologist, of initial Project ground-disturbing activities of previously undisturbed soils by a qualified archaeologist and a Native American-designated monitor, if participating. The plan will include (but not be limited to) the following components:

- The identification and qualifications of person(s) responsible for conducting monitoring activities, including a request to the Native American Tribe for a Native American-designated monitor.
- The identification of person(s) responsible for overseeing and directing the monitors.
- Monitoring protocols and procedures and the required format and content of monitoring logs.
- The schedule for submittal of monitoring logs and identification of person(s) responsible for review and approval of monitoring logs.
- A protocol for notifications in the event cultural resources are encountered, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation).
- Methods to ensure the security of cultural resources sites.
- A protocol for notifying local authorities (i.e., Sheriff, Police) should site looting and other illegal activities occur during construction.
- Protocols and procedures for a final monitoring report that summarizes the duration of monitoring activities, all daily monitoring logs, any inadvertent discoveries, and associated reporting. This report will be submitted to the County and, once finalized, to the SSJVIC.

During the course of the monitoring, the Project Archaeologist may adjust the frequency, from continuous to intermittent, of the monitoring based on the conditions and professional judgment regarding the potential to impact resources, with consideration of the judgment of the tribal monitor.

Significance after Mitigation: Less than significant. Implementation of Mitigation Measures 3.6-1, 3.6-2, 3.6-3, and 3.6-4 would reduce the potential impact to a less-than-significant level because ground disturbing activities in undisturbed soils will be monitored and any potential archaeological resources identified, that could be considered tribal cultural resources, would be evaluated and treated including consulting with Native American representatives in determining appropriate treatment.

3.6.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the off-site point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

There are no historical resources, unique archaeological resources, or tribal cultural resources identified where the PG&E Components would be constructed, operated and maintained. Therefore, the PG&E Components would result in no impact on known historical, unique archaeological resources, or tribal cultural resources. (*No Impact*)

Impact 3.6-4: Ground-disturbing activities associated with the PG&E Components could affect previously unknown, buried archaeological resources or human remains. (*Less than Significant Impact*)

Construction of the PG&E Components could affect previously unknown, buried archaeological resources or human remains. However, in the event of an inadvertent discovery of cultural resources or human remains, PG&E would comply with its standard measures, which are designed to minimize the adverse effects of such discoveries. A less than significant impact would result.

Mitigation: None required.

3.6.4 Cumulative Effects Analysis

The geographic scope for cumulative impacts to cultural resources and tribal cultural resources comprises a 5-mile radius from the Project site. The geographic scope of analysis is appropriate because the archaeological and historical 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 professional experience of the EIR preparers and the tribes, research, and the pre-contact context, the area within this 5-mile radius of the Project site may contain a significant archaeological and historical record that has not been well-documented or recorded. Therefore, this analysis conservatively assumes that the land within this area contains cultural resources or tribal cultural resources that are not yet known.

The temporal scope for cumulative impacts on cultural resources and tribal cultural resources would be the duration of the Project's ground-disturbing activities. In this context, the incremental impacts of the Project could combine with similar incremental impacts of past, other present, and reasonably foreseeable future projects within the 5-mile radius of the site to cause or contribute to a significant cumulative impact if any of the criteria in Section 4.6.2, *Significance Criteria*, were exceeded. As identified in Section 3.1.3, *Cumulative Effects Approach*, the following past (existing) projects are located within 5 miles of the Project site: the existing Tranquillity, Adams East, North Star, Aspiration Solar G, and CalRenew-1 solar projects and the Tranquillity Switching Station. The following present, or reasonably foreseeable future projects also are located in this area: the Luna Valley, Scarlet, and Sonrisa solar projects.

3.6.4.1 Cumulative Effects of the Heartland Solar Project

Criteria a) and b)

Impact 3.6-1c: Heartland Solar Project-related ground disturbance would not cause or contribute to a significant cumulative effect due to substantial adverse change in the significance of a newly-discovered historical or archaeological resource, as defined in CEQA Guidelines Section 15064.5. ***(Less-than-Significant with Mitigation Implemented)***

There is no indication in Section 3.6.1.2, *Environmental Setting*, or elsewhere in the Project record of any existing significant adverse condition relating to cultural resources in the geographic area of cumulative consideration to which the Project could contribute. Project-level mitigation measures (as stated under Impact 3.6-1) would require cessation of activities and buffering of finds in a manner that would substantially reduce the incremental contribution of the Project to any potential cumulative impact. Thus, even if it conservatively is assumed that a potential significant cumulative effect exists, the negligible impact remaining after the implementation of the recommended mitigation measures would not be cumulatively considerable. The Project would contribute to a **less than significant** cumulative impact to historical resources and archaeological resources.

Mitigation: Implement Mitigation Measure 3.6-1.

Criterion c)

Impact 3.6-2c: Heartland Solar Project-related ground disturbance would not cause or contribute to a significant cumulative effect due to the disturbance of or damage to human remains. ***(Less-than-Significant with Mitigation Implemented)***

There is no indication in Section 3.6.1.2, *Environmental Setting*, or elsewhere in the Project record of any existing significant adverse condition relating to the disturbance of or damage to any human remains, including those interred outside of formal cemeteries in the geographic area of cumulative consideration to which the Project could contribute. Project-level mitigation measures (as stated under Impact 3.6-2) would require cessation of activities and buffering of finds in a manner that would substantially reduce the incremental contribution of the Project to any potential cumulative impact. Thus, even if it conservatively is assumed that a potential significant cumulative effect exists, the negligible impact remaining after the implementation of the recommended mitigation measures would not be cumulatively considerable. The Project would contribute to a **less than significant** cumulative impact relating to criterion c).

Mitigation: Implement Mitigation Measure 3.6-3.

Criterion d)

Impact 3.6-3c: Ground disturbing activities associated with the Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a substantial adverse change to previously unknown archaeological resources that are also tribal cultural resources. ***(Less-than-Significant with Mitigation Implemented)***

There is no indication in the Project record of any existing significant adverse condition relating to tribal cultural resources in the Project's geographic area of cumulative consideration and Project-level mitigation measures (as stated under Impact 3.6-3) would ensure that the incremental contribution of the Project, in combination with the incremental impacts of other projects would not cause a significant adverse cumulative effect. The Project's cumulative impact on tribal cultural resources would be **less than significant**.

Mitigation: Implement Mitigation Measures 3.6-1, 3.6-2, 3.6-3, and 3.6-4.

3.6.4.2 Cumulative Effects of the PG&E Components

Impact 3.6-4c: Ground-disturbing activities associated with the PG&E Components could contribute to cumulative impacts on previously unknown, buried archaeological resources or human remains. (*Less than Significant Impact*)

There is no indication in the Project record of any existing significant adverse condition relating to historical resources, unique archaeological resources, human remains, or tribal cultural resources in the PG&E Component of the Project's geographic area of cumulative consideration and PG&E's standard measures would ensure that the incremental contribution of the PG&E Components, in combination with the incremental impacts of other projects would not cause a significant adverse cumulative effect. The PG&E Components' cumulative impact on tribal cultural resources would be **less than significant**.

Mitigation: None required.

3.6.5 References

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3.7 Energy

This section identifies and evaluates issues related to electricity and transportation fuels ("Energy" for purposes of this Environmental Impact Report [EIR]) for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). It describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. Fresno County (County) did not receive scoping comments pertaining to energy (see Appendix A, *Scoping Report*).

This analysis is based in part on the *Air Quality and Greenhouse Gas Emissions Technical Report* prepared on behalf of the Heartland Solar 1, LLC (Applicant) team (Appendix D1). The preparers of this Draft EIR independently reviewed this and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance, in combination with other materials included in the formal record, in the preparation of the EIR. In addition, on Fresno County's behalf, Environmental Science Associates (ESA) prepared fuel- and electricity-use calculations (Appendices G and D2, respectively). The analysis in this section also is based in part on the Project's fuel use calculations provided in Appendix G.

3.7.1 Setting

3.7.1.1 Study Area

The study area for Project impacts related to energy includes the State of California for purposes of overall energy use and energy-related plans, the PG&E service area for purposes of electrical service, Fresno County for purposes of fuel consumption, and the area surrounding the Project site as it relates to energy generation, energy consumption, and fuel consumption.

3.7.1.2 Environmental Setting

Electricity

In 2020, total system electricity generation for California was 272,576 gigawatt-hours (GWh), down 1.8 percent from 2019's total generation of 277,704 GWh. Approximately 70 percent of the electrical power needed to meet California's demand is produced in the state; the balance, approximately 30 percent, is imported from the Pacific Northwest and the Southwest. In 2020, California's in-state electricity generation was derived from natural gas (48 percent); large hydroelectric resources (9 percent); nuclear sources (9 percent); oil and coal (<1 percent); and renewable resources that include geothermal, biomass, small hydroelectric, wind, and solar (33 percent). Of the approximately 63,665 GWh generated from renewable sources in the state, solar-generated electricity made up the highest proportion (46 percent), followed by wind (21 percent), geothermal (18 percent), biomass (9 percent), and small hydroelectric (5 percent) (CEC 2023a).

PG&E is an investor-owned utility company that provides electricity supplies and services throughout a 70,000-square-mile service area that extends from Eureka in the north to Bakersfield

in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. Fresno County is within PG&E's service area for electricity. Operating characteristics of PG&E's electricity supply and distribution systems are provided below. Also discussed is the regional consumption of transportation fuels.

PG&E Electric Utility Operations

PG&E provides "bundled" services (i.e., electricity, transmission, and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial, and agricultural consumers. In recent years, PG&E has improved its electric transmission and distribution systems to accommodate the integration of new renewable energy resources, distributed generation resources, and energy storage facilities, and to help create a platform for the development of resilient grid technologies (PG&E 2021).

In 2022, PG&E owned approximately 7,832 megawatts (MW) of generation capacity, itemized below (see **Table 3.7-1**). The remaining electrical power in PG&E's portfolio is purchased from other sources in and outside of California.

TABLE 3.7-1
PG&E-OWNED ELECTRICITY GENERATING SOURCES (2022)

Source	Generating Capacity (MW)
Nuclear (Diablo Canyon-2 reactors)	2,240
Hydroelectric	3,857
Fossil Fuel-Fired	1,400
Fuel Cell	183
Solar Photovoltaic (13 units;12 in Fresno County, 1 in Kings County)	152
Total	**7,832**

NOTE: MW = megawatts
SOURCE: PG&E 2021

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. This program, known as the Renewables Portfolio Standard (RPS) program, required the amount of renewable energy that must be delivered by most load-serving entities to be at least 60 percent of total annual retail sales by 2030 and 100 percent by 2045.

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 3.7-2**, during 2022, 40 percent of PG&E's energy deliveries were from renewable energy sources (PG&E 2021).

TABLE 3.7-2
PG&E 2022 RENEWABLE ENERGY SOURCES

Source	Percent of Total Energy Portfolio
Solar	24
Wind	9
Bioenergy	5
Geothermal	-
RPS-Eligible Hydroelectric	2
Total	**40**

NOTE: RPS = Renewables Portfolio Standard
SOURCE: PG&E 2021

Electricity Consumption

Table 3.7-3 shows electricity consumption by sector in the PG&E service area based on data available from the California Energy Commission (CEC). As shown in the table, PG&E delivered approximately 78 billion kilowatt-hours (kWh) in 2021, of which approximately 10 billion kWh were consumed by the industrial sector.

In Fresno County, approximately 8.4 billion kWh of electricity was consumed in 2021, with approximately 5.2 billion kWh consumed by non-residential uses (CEC 2023c).

TABLE 3.7-3
ELECTRICITY CONSUMPTION BY SECTOR IN PG&E SERVICE AREA (2021)

Agricultural and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage
7,446	26,009	3,869	9,959	1,764	29,229	310	78,587

NOTE: All usage expressed in millions of kilowatt-hours (gigawatt-hours).
SOURCE: CEC 2023b

Transportation Fuels

Gasoline and diesel, both derived from petroleum (or crude oil), are the two most common fuels used for vehicular travel. The annual transportation fuel consumption of diesel and gasoline in 2022 in California was approximately 3,170 million gallons and 13,919 million gallons, respectively (CDTFA 2023a, 2023b). Transportation fuel consumption of diesel and gasoline for Fresno County in 2021 was 182 million gallons and 387 million gallons, respectively (CEC 2023d).

The State is now working on developing flexible strategies to reduce petroleum use. Over the last decade, California has implemented several regulations, rules, and policies to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and greenhouse gas (GHG) emissions from the transportation sector, and reduce vehicle miles traveled (VMT). Accordingly, diesel and gasoline consumption in California has declined. The

CEC predicts that the demand for gasoline will continue to decline over the next 10 years, and there will be an increase in the use of alternative fuels (CEC 2018).

Local Energy Infrastructure

Multiple solar energy facilities are operating or under development in the vicinity of the Project site, including the Tranquillity Solar Project to the south and the Adams East Solar Project to the east of the site. The Tranquillity Solar Project includes eight power blocks of solar arrays, eight electrical substations, up to 200 MW of on-site energy storage, and other infrastructure with the capacity to generate up to 400 megawatts alternating current (MW_{AC}). The Adams East Solar Project has the capacity to generate approximately 19 MW_{AC}. Additional electrical infrastructure in the Project vicinity includes transmission lines and PG&E's Tranquillity Switching Station. The existing Helm-Panoche/Panoche-Kearney 230-kilovolt (kV) transmission lines run generally east-west from the Tranquillity Switching Station.

3.7.1.3 Regulatory Setting

Federal

Energy Conservation Policy Act

The National Energy Conservation Policy Act (NECPA, 42 United States Code [U.S.C.] 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. NECPA established energy-efficiency standards for consumer projects and includes, among other things, energy-efficiency standards for new construction. Furthermore, the NECPA established fuel economy standards for on-road motor vehicles in the United States. The National Highway Traffic and Safety Administration (NHTSA), which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and revising existing standards under the NECPA. The USDOT is authorized to assess penalties for noncompliance.

Energy Policy Act of 2005

The Energy Policy Act of 2005 (42 U.S.C. 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 microturbine power plants, and solar power equipment.

Energy and Independence Security Act of 2007

The Energy and Independence Security Act of 2007 (42 U.S.C. Section 17001) sets federal energy management requirements in several areas, including energy reduction goals for federal buildings, facility management and benchmarking, performance and standards for new buildings and major renovations, high-performance buildings, energy savings performance contracts, metering, energy-efficient product procurement, and reduction in petroleum use, including by setting automobile efficiency standards, and increase in alternative fuel use. This act also amends portions of the NECPA, described above.

Corporate Average Fuel Economy Standards

Section 3.9, *Greenhouse Gas Emissions*, details federally established fuel economy standards by the U.S. Environmental Protection Agency (USEPA) and the NHTSA. NHTSA's Corporate Average Fuel Economy (CAFE) standards regulate how far vehicles must travel on a gallon of fuel. NHTSA sets CAFE standards for passenger cars and for light trucks (collectively, "light-duty vehicles") and separately sets fuel consumption standards for medium- and heavy-duty trucks and engines. In the course of more than 30 years, this regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet (NHTSA 2014, 2019).

State

Warren-Alquist Act

The 1975 Warren-Alquist Act (Public Resources Code 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 also was the driving force behind the creation of Appendix F to the CEQA Guidelines.

California Integrated Energy Policy

Public Resources Code Section 25301(a) requires the CEC to develop an integrated energy plan at least every two years for electricity, natural gas, and transportation fuels. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero emission vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

An overarching goal of the resulting Integrated Energy Policy Report is to achieve the statewide GHG emission reduction targets, while improving overall energy efficiency. See, for example, the CEC's 2021 Integrated Energy Policy Report, which includes integration of increasing amounts of renewable energy resources, including solar, as a key component, as well as pairing energy storage with generation projects (CEC 2022). This report assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources, ensure reliable, secure, and diverse energy supplies, and enhance the state's economy.

Renewables Portfolio Standard

The State of California adopted standards to increase the percentage that retail sellers of electricity, including investor-owned utilities and community choice aggregators, must provide from renewable resources. Qualifying renewables under the RPS include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. The CPUC and the CEC jointly implement the RPS program. The CPUC's responsibilities include: (1) determining annual procurement targets and enforcing compliance; (2) reviewing and approving each investor-owned utility's renewable energy procurement plan; (3) reviewing

contracts for RPS-eligible energy; and (4) establishing the standard terms and conditions used in contracts for eligible renewable energy (CPUC 2021).

Senate Bill 350 – Clean Energy and Pollution Reduction Act of 2015

Senate Bill (SB) 350, known as the Clean Energy and Pollution Reduction Act of 2015, was enacted on October 7, 2015. It establishes objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

1. To increase from 33 percent to 50 percent by December 31, 2030, the procurement of electricity from renewable sources.
2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Senate Bill 100 and Executive Order B-55-18

On September 10, 2018, Governor Edmund G. Brown Jr. signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also increases required energy from renewable sources for both investor-owned and publicly owned utilities from an earlier established goal of 50 percent to 60 percent by 2030. Incrementally, these energy providers also are required to have a renewable energy supply of 44 percent by 2024 and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the earlier-established RPS goals.

On the same day that SB 100 was signed, Governor Brown signed Executive Order B-55-18 with a new statewide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045 and to maintain net negative emissions thereafter.

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. Included in Part 6 of the Building Code are standards mandating energy efficiency measures in new construction. Since its establishment in 1977, the building efficiency standards (along with standards for energy efficiency in appliances) have contributed to a reduction in electricity and natural gas usage and costs in California. The standards are updated every 3 years to incorporate new energy efficiency technologies.

The California Green Building Standards Code (CALGreen, Title 24 Part 11) is a statewide regulatory code for all buildings. CALGreen is intended to encourage more sustainable and environmentally friendly building practices, require use of low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. Title 24 is implemented through the local planning and permits processes.

Construction Equipment Idling

The California Air Resources Board has also adopted a regulation for in-use off-road diesel vehicles that is designed to reduce emissions from diesel-powered construction vehicles by

imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The regulation requires an operator of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to no more than 5 minutes.

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 within 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. Appendix I2 includes details about the proposed solar facility's consistency with the County's Solar Facility Guidelines.

Fresno County General Plan

The Fresno County General Plan was updated in 2024. The Health and Safety Element includes goals and policies pertaining to climate change vulnerability assessment though none is specifically related to utility infrastructure projects (Fresno County 2024).

3.7.2 Significance Criteria

The Project would result in significant impacts related to Energy if it would:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.7.3 Direct and Indirect Effects

3.7.3.1 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 Project construction, operation and maintenance, and decommissioning. The impact analysis is informed by Appendix F of the CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction and operational energy use estimates for the Project would be considered excessive, wasteful, or inefficient, taking into account that the Project would provide a new source of renewable energy. GHG emissions estimated for Project-related combustion of diesel and gasoline were used to estimate the associated fuel volumes discussed in this analysis. For analysis associated with Project GHG emissions estimates, refer to Section 3.9, *Greenhouse Gas Emissions*.

3.7.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

The Heartland Solar Project would use no natural gas for construction, operation (including the power generation process) and maintenance, or decommissioning and would not involve consumption of jet fuel or aviation gas for any purpose. Therefore, the Project would have no impact on natural gas or aviation fuel supplies.

Impact 3.7-1: Heartland Solar Project construction, operation and maintenance, and/or decommissioning and site reclamation would result in the wasteful, inefficient, or unnecessary consumption or use of energy. (*Less-than-Significant Impact)*

The analysis summarized in this section utilizes the assumptions identified in Appendix D1, *Air Quality and Greenhouse Gas Emissions Technical Report,* to estimate the total energy requirements of the Project by fuel type and end use as recommended by CEQA Guidelines Appendix F. Additional calculations were conducted to estimate Project-related fuel use volumes, are summarized below, and are provided in Appendix G, *Energy Calculations*.

Construction and Decommissioning

Construction and the future decommissioning of the Heartland Solar Project would result in fuel consumption from the use of construction tools and equipment, vendor truck trips, and vehicle trips generated from workers traveling to and from the Project site. Construction is expected to consume a total of approximately 271,360 gallons of diesel fuel from construction equipment and truck trips, and approximately 389,710 gallons of gasoline from construction worker vehicle trips. Project fuel use during construction would represent approximately 0.15 percent of diesel and 0.10 percent of gasoline sold in Fresno County in 2021 (CEC 2023d, Appendix G).

Construction activities of the Project would comply with state and local regulations, such as Title 13 of the California Code of Regulations, Sections 2485 and 2449, which require equipment and commercial vehicle operators to limit idling to no more than five minutes. Compliance with the State's regulation for in-use off-road diesel vehicles would ensure that fuel energy consumed in the construction phase would not be wasted through unnecessary idling. Therefore, energy use would not be wasteful, inefficient, or unnecessary during construction of the Project and the impact would be less than significant.

When the Project is decommissioned, the site would be returned to a stable condition comparable to pre-Project conditions in accordance with applicable land use regulations in effect at that time via the implementation of a County-approved reclamation plan (Appendix B2). These activities would occur over a period of a year or more and would include the use of similar equipment to construction activities; therefore, similar impacts would be expected. Decommissioning activities and corresponding fuel and energy consumption would be temporary and could be comparable to the construction-related fuel and electricity demand. This would not represent a substantial

demand on energy resources and would be contributing to develop a renewable energy supply. Thus, equipment used for energy consumption by the Project's construction and decommissioning would not result in inefficient, wasteful, or unnecessary energy use and the impact would be less than significant.

Operation and Maintenance

Operation and maintenance activities for the Project would require the use of light-duty trucks and other light equipment for maintenance and module washing. Large or heavy equipment may be brought to the Project site for equipment repair, replacement, or vegetation control. Gasoline would likely be required for Project workers commuting to and from the Project site. Fuel usage would be relatively small in comparison to the overall gasoline use in Fresno County and would not be considered an inefficient use of fuel given that it would be associated with the production of renewable energy. Thus, although irreversible commitments of small quantities of nonrenewable resources would occur during operation of the Project, the amount of fuel consumed during Project operation would be relatively minimal and would not be considered an inefficient use.

Project operation and maintenance activities also would require electricity to charge the battery energy storage system, operate the Supervisory Control and Data Acquisition (SCADA) system's remote monitoring and control of inverters and other facility components, and for lighting, security cameras, and other electronic systems. However, the Project's power demand would be greatly offset by the Project's generation of renewable energy, and the battery energy storage system would be charged during times of excess supply, releasing that energy back to the grid during times of peak demand. Therefore, the overall energy demand would not constitute a wasteful, inefficient, or unnecessary use of energy and the overall impact would be less than significant.

Mitigation: None required.

Criterion b) Whether the Project would conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The Heartland Solar Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (*No Impact*)

The Heartland Solar Project would produce a new renewable source of energy in Fresno County and so it would directly support California's RPS goal of increasing the percentage of electricity procured from renewable sources to 100 percent by 2045.

Construction, operation, and maintenance of the Project would be conducted in a manner consistent with the goals and strategies of State energy standards. Compliance with the State's regulation for in-use off-road diesel vehicles that requires idling limitations to no more than five minutes would ensure that fuel energy consumed in the construction phase would not be wasted through unnecessary idling. Project construction would be short-term and would not result in the permanent increased use of non-renewable energy resources. Fuel use for Project operation and maintenance would be minimal, requiring a negligible percentage of the overall fuel supplied to the Fresno County area.

The NHTSA required manufacturers of light duty vehicles to meet an estimated combined passenger car and light truck average fuel economy level of 34.1 miles per gallon (mpg) by model year 2016. In the course of more than 30 years, the NECPA regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet, and has also protected against inefficient, wasteful, and unnecessary use of energy. The projected fleet-wide mpg for light duty vehicles is expected to reach 40 mpg by 2026 (USEPA 2021). Vehicles used by Project construction, maintenance, and decommissioning workers to travel to and from the Project sites would already incorporate these standards, therefore the Project would not impede standards designed to improve vehicle fuel economy.

The proposed operation and maintenance buildings would be subject to the Building Energy Efficiency Standards required by Title 24, Part 6. The Building Energy Efficiency Standards are intended to save energy, increase electricity supply reliability, and avoid the need to construct new fossil-fueled power plants. 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; use of energy-efficient heating, ventilation, and air conditioning; solar-reflective roofing materials; energy-efficient indoor and outdoor lighting systems, and other measures. The Project would also be subject to CALGreen during construction and decommissioning activities, which requires 65 percent construction and demolition waste diversion.

Because the Project would provide a new source of renewable energy supporting the State's energy goals and comply with fuel and energy efficiency regulations, the Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impact would occur.

Mitigation: None required.

3.7.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Impact 3.7-2: Construction, operation, and maintenance of the PG&E Components could affect energy resources. (*Less-than-Significant Impact)*

The fuel use estimates for construction of the Project described in the Impact 3.7-1, above, include the fuel use that would be associated with the PG&E Components. Less than 15 percent of the Project's diesel fuel use and less than 5 percent of the Project's gasoline use would be associated with construction of the PG&E Components. During operations, the PG&E Components would

require virtually no energy (i.e., electricity or fuel) consumption. PG&E's required compliance with the State's regulation for in-use off-road diesel vehicles would ensure that fuel energy consumed in the construction phase would not be wasted through unnecessary idling. Therefore, PG&E's energy use would not be wasteful, inefficient, or unnecessary during construction of the PG&E Components and the impact would be less than significant. In addition, the PG&E Components would assist in providing a new source of renewable energy to support the State's energy goals and comply with fuel and energy efficiency regulations and would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Therefore, the PG&E Components would result in no impact on state or local plans for energy or energy efficiency.

Mitigation: None required.

3.7.4 Cumulative Effects Analysis

The geographic context for potential cumulative impacts related to electricity is PG&E's service area and for equipment and vehicle fuel use is within the Project's construction equipment delivery and workers' average travel radius because these are the areas within which energy resources would be demanded and supplied for the Project.

3.7.4.1 Cumulative Effects of the Heartland Solar Project

The Project would use energy resources during initial demolition and construction, operations and maintenance, and decommissioning; therefore, it could contribute to potential cumulative impacts during any of these phases as well.

Criterion a)

Impact 3.7-1c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the wasteful, inefficient, or unnecessary consumption or use of energy. (*Less-than-Significant Impact*)

Regarding electricity, PG&E conducts rotating power outages, sometimes called *power safety shut-offs* or *de-energization events*, within its service territory as needed to reduce demand on the power grid and to prevent its powerlines from igniting wildfires on especially hot, dry days. For example, according to data aggregated by Bloom Energy and PowerOutage.us, there were 671 total blackouts and 625,777 customers affected in Fresno County by power outages between October 15, 2017, and December 31, 2019, and the number of such events is increasing statewide (Bloom Energy and PowerOutage.us 2023). For example, PG&E notified 525,000 Fresno-area customers on September 6, 2022, of the potential for rolling blackouts in their neighborhoods during a prolonged heatwave (PG&E 2022). Power outages typically last between 1 and 2 hours (PG&E 2023). The Project's less-than-significant incremental impact relating to electricity use, when combined with the incremental impacts of electricity use by other past, present, and reasonably foreseeable future projects identified in Section 3.1.3, *Cumulative Effects Approach*, would not be cumulatively considerable because the Project would generate more electricity than it would demand. Because the Project overall would have a beneficial cumulative impact on energy resources, it would not result in a cumulatively considerable contribution to any adverse significant impact in this regard.

Similarly, regarding the efficiency of fuel use, there is no existing significant adverse condition (such as a shortage) that would be worsened or intensified by the Project. Available fuel inventories fluctuate over time, with the last severe shortages occurring in the 1970s, when Governors Ronald Reagan and Edmund G. Brown Jr. instituted a system for buying gas where the timing of eligibility to buy gas was determined by whether your license plate ended in an even number or an odd one (Morrison 2022). More recent events, such as concerns about the cyber disruption of the Colonial Pipeline system in the southeastern United States in 2021 (Colonial Pipeline 2021), increased travel demand following the COVID-19 pandemic, California refineries' seasonal switching of gasoline formulations and overlapping planned maintenance periods all have caused price spikes. However, the trend shows that gasoline prices are declining: in July 2022, California retail gas cost approximately $6.29 per gallon; in October 2022, the price was approximately $5.90 per gallon; in March 2023, it was $4.78 per gallon (YCharts 2023). The Project's incremental, less-than-significant demand for fuel would combine with the incremental demands for fuel caused by other past, present, and reasonably foreseeable future projects identified in Section 3.1.3, *Cumulative Effects Approach*. However, the Project's incremental contribution would not cause or contribute to a significant adverse cumulative impact relating to the wasteful, inefficient, or unnecessary consumption or use of vehicle fuel. In the event of future shortages, 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 cause or contribute to a significant cumulative effect.

Criterion b)

Because the Heartland Solar Project would have no impact due to a conflict with or obstruction of a state or local plan for renewable energy or energy efficiency, it could not cause or contribute to any cumulative impact in this regard.

Mitigation: None required.

3.7.4.2 Cumulative Effects of the PG&E Components

Impact 3.7-2c: Construction, operation, and maintenance of the PG&E Components could contribute to cumulative effects on energy resources. (*Less-than-Significant Impact)*

Regarding the efficiency of fuel use, there is no existing significant adverse condition (such as a shortage) that would be worsened or intensified by the PG&E Components. Under these conditions, the less-than-significant impact relating to wasteful, inefficient, or unnecessary consumption or use of fuel by the PG&E Components would not cause or contribute to a significant cumulative effect. In addition, because the PG&E Components would have no impact due to a conflict with or obstruction of a state or local plan for renewable energy or energy efficiency, they could not cause or contribute to any cumulative impact in this regard.

Mitigation: None required.

3.7.5 References

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3.8 Geology, Soils, and Paleontological Resources

This section identifies and evaluates issues related to geology, soils, and paleontological resources, including seismicity, erosion, landslide potential and related considerations for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. Fresno County (County) did not receive any scoping comments pertaining to geology, soils, or paleontological resources. See Appendix A, *Scoping Report*.

This analysis is based in part on a site-specific Paleontological Resources Assessment Report conducted in June 2022 (Environmental Science Associates 2022), as well as the Phase I analysis conducted in September 2022. Consistent with County practice, the paleontological resources report is being kept confidential. A copy of the site assessment is provided in Appendix H, *Phase I Site Assessment*.

3.8.1 Setting

3.8.1.1 Study Area

As discussed in Section 2.2, *Location of the Project Site*, and shown on Figures 2-1 and 2-2, the Project site is located approximately 6 miles southwest of the city of Mendota, 10 miles east of Interstate 5 (I-5), to the east of South San Bernardino and Los Angeles avenues, south of West American Avenue, west of State Route 33, 0.5 mile north of Manning Avenue, and 1.25 miles north of the Tranquillity Switching Station. The Project site also is located across State Route 33 from the existing Adams East Solar facility and immediately north of the Luna Valley Solar facility. Site access to the solar facility would be via West Adams Avenue. The study area for this analysis extends 35 miles beyond the Project site to account for seismic shaking the Project site may experience due to earthquake faults in the region.

3.8.1.2 Environmental Setting

Regional Geology

The Project site is located within the southern portion of the Great Valley geomorphic province,[1] just east of the Coast Ranges (CGS 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 and to the west by the Coast Ranges. The Great Valley rises from about sea level to approximately 400 feet in elevation at its northern and southern ends. The northern portion of the valley, referred to as the Sacramento Valley, is drained by the Sacramento River, while 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 filled with large volumes of

[1] A geomorphic province is an area that possesses similar bedrock, structure, history, and age. California has 11 geomorphic provinces (CGS 2002).

sediments that have been eroded from the Sierra Nevada and Coast Range provinces. These sediments are nearly 6 miles deep at the southern end of the Great Valley (Leech 2006).

The Great Valley occupies a trough created in the Mesozoic era by tectonic forces related to the subduction of the ancient Farallon Plate beneath the western margin of the North American Plate (Ingersoll 1982). Formerly a forearc trench, the Great Valley was later filled with thick sequences of alluvial sediments derived primarily from erosion of the Sierra Nevada to the east and the Coast Ranges to the west (Lettis 1982). In addition to the fans along the margins, various lacustrine and fluvial units are found along the axis of the trough, particularly in environments of the past three million years (Bartow 1991). To the west of the Project area, continual tectonism related to the collision of the Pacific and North American plates along the San Andreas Fault Zone has led to regions of greater and lesser uplift, impacting sedimentation rates in the Great Valley. The Project would be constructed on the valley alluvium, which increases with depth, and would not be seated on bedrock.

Local Geology

Geologic mapping by Dibblee and Minch (2007) indicates that the surficial geology at the Project site is entirely Holocene-age alluvial deposits. While not mapped at the surface at the Project site, older Pleistocene-age alluvial deposits are mapped in the vicinity and may be present at depth. Both the Holocene and Pleistocene-age alluvial deposits are comprised of gravel and sand. The specific depth to bedrock is unknown at the Project site. The thickness of the surficial Holocene alluvium varies across the San Joaquin Basin but is expected to be at least 15 feet and is likely much greater at the Project site. This conclusion is based on the Project site location, the topography, and available geologic mapping.

The topography of the Project site is generally flat. The Project site is within the Coit Ranch and Levis California, 7.5-minute quadrangles at elevations that range from 183 to 202 feet above mean sea level, gently sloping to the east.

The Project area was mapped at various scales by Jennings and Strand (1958) and Dibblee and Minch (2007). On each map, the Project site is underlain by Quaternary alluvium (Qa) without specifics on age or facies. The descriptions are quite simplified as alluvial gravel, sand, and clay of Holocene age. Depending on the excavation, it is possible that the Holocene alluvium at the surface gives way to Pleistocene alluvium at depth; however, it is not likely given the distance of the ground surface from the bedrock margin and the anticipated maximum depth of Project disturbance of about 50 feet. The location of the Project site and the nature of the Project make it unlikely that bedrock below the alluvium would be encountered by Project activities.

Soils

Soil Units

Soil data from the Natural Resources Conservation Service Web Soil Survey indicates that the soil units underlying the Project site consist of the Tranquillity Clay and Tachi Clay (NRCS 2022).

Expansive Soils

Expansive soils are soils that possess a "shrink-swell" characteristic that is also referred to as linear extensibility. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying; the volume change is reported as a percent change for the whole soil. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater. Expansive soils are typically very fine-grained and have a high to very high percentage of clay. Structural damage may occur incrementally over a long period of time, usually as a result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils.

Linear extensibility data from the Natural Resources Conservation Service Web Soil Survey indicates that the soils underlying the Project site may exhibit a moderate to very high linear extensibility rating (NRCS 2022).

Geologic Hazards

Faulting and Seismicity

Faults are planar features within the earth's crust that have formed to release strain caused by the dynamic movements of the earth's major tectonic plates. An earthquake on a fault is produced when these strains overcome the inherent strength of the earth's crust, and the rock ruptures. The rupture causes seismic waves that propagate through the earth's crust, producing the groundshaking effect known as an earthquake. The rupture also causes variable amounts of slip along the fault, which may or may not be visible at the earth's surface.

Geologists commonly use the age of offset rocks as evidence of fault activity: the younger the displaced rocks, the more recently earthquakes have occurred. To evaluate the likelihood that a fault would produce an earthquake, geologists examine the magnitude and frequency of recorded earthquakes and evidence of past displacement along a fault. The California Geological Survey (CGS) defines an active fault as one that has had surface displacement within Holocene time (within the last 11,000 years; the U.S. Geological Survey [USGS] uses within the last 15,000 years). A Quaternary fault is defined as a fault that has shown evidence of surface displacement during the Quaternary period (the last 1.6 million years) unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer.

Surface Fault Rupture

There are no known Holocene-active faults or pre-Holocene faults within the Project site (CGS 2010). The Project site is not within or near an established Alquist-Priolo Earthquake Fault Zone, as mapped by the CGS. It is located approximately 28 miles east of the Ortigalita Fault and about 33 miles east of the San Andreas Fault Zone.

Seismic Ground Shaking

Ground shaking occurs due to a seismic event and can cause extensive damage to life and property and may affect areas hundreds of miles away from the earthquake's epicenter. The extent of the damage varies by event and is determined by several factors, including (but not limited to) magnitude and depth of the earthquake, distance from epicenter, duration and intensity of the shaking, underlying soil and rock types, and integrity of structures.

The western San Joaquin Valley region of California is seismically active and moderate to severe ground shaking in the vicinity of the Project site is expected. The 2014 Working Group on California Earthquake Probabilities concluded that there is a 95 percent probability that a magnitude 6.7 earthquake or higher will strike somewhere in Northern California by the year 2045 (Field et al. 2015).

ShakeMap is a product of the USGS Earthquake Hazards Program; ShakeMap earthquake scenarios represent one realization of a potential future earthquake by assuming a particular magnitude and location. According to the existing ShakeMap that corresponds with an earthquake planning scenario generated by an estimated 7.1 magnitude earthquake along the Ortigalita Fault Zone, the Project site would be subjected to moderate to strong seismic ground shaking (USGS 2021). While there is no ShakeMap earthquake scenario at the Project site generated for the San Andreas Fault Zone, it is assumed that an earthquake of equal or greater magnitude to the Ortigalita Fault Zone scenario would produce ground shaking of equal or greater magnitude.

Liquefaction and Lateral Spreading

Liquefaction is a phenomenon in which unconsolidated, water saturated sediments become unstable due to the effects of strong seismic shaking. During an earthquake, these sediments can behave like a liquid, potentially causing severe damage to overlying structures. Lateral spreading is a variety of minor landslide that occurs when unconsolidated liquefiable material breaks and spreads due to the effects of gravity, usually down gentle slopes (Virginia Polytechnic Institute and State University 2013). Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore-pressure buildup or liquefaction in a shallow underlying deposit during an earthquake. The occurrence of this phenomenon is dependent on many complex factors, including the intensity and duration of ground shaking, particle-size distribution, and density of the soil.

The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structure slabs due to sand boiling, and buckling of deep foundations due to ground settlement. Dynamic settlement (i.e., pronounced consolidation and settlement from seismic shaking) may also occur in loose, dry sands above the water table, resulting in settlement of and possible damage to overlying structures. In general, a relatively high potential for liquefaction exists in loose, sandy soils that are within 50 feet of the ground surface and are saturated (below the groundwater table). Lateral spreading can move blocks of soil, placing strain on buried pipelines that can lead to leaks or pipe failure.

Fine-grained, cohesive soils are anticipated at the Project site; therefore, the potential for liquefaction is expected to be low. The CGS has not mapped the Project site region for susceptibility to liquefaction (CGS 2025).

Landslides

Landslides are one of the various types of downslope movements in which rock, soil, and other debris are displaced due to the effects of gravity. The potential for material to detach and move down slope depends on multiple factors including the type of material, water content, and steepness of terrain. The CGS has not mapped the Project site region for susceptibility to landslide risks under

the Seismic Hazards Mapping Act (CGS 2025). As noted above, the site is generally flat with little to no topographic relief.

Subsidence

Land subsidence is the gradual settling or sudden sinking of the earth's surface due to subsurface movement of earth materials (USGS 1999). Compaction of subsurface water-containing geologic layers is the primary cause of land subsidence. Regional ground subsidence typically is caused by compaction of sub-surface water as a result of petroleum or groundwater withdrawal. The soil compacts because the water or petroleum formerly in the pore spaces is partially responsible for holding the ground up. This 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.

The San Joaquin Valley has a history of land subsidence due to groundwater pumping and related compaction of sand and clay layers in the Valley sediments. The Project site is in an area that has experienced moderate land subsidence in the past (Sneed et al. 2013).

Paleontological Resources

The Society of Vertebrate Paleontology (SVP) has established standard guidelines (SVP 2010) that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines.

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources," the SVP (2010) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential.

Paleontological resources are the fossilized remains or impressions of plants and animals, including vertebrates (animals with backbones; mammals, birds, fish, etc.), invertebrates (animals without backbones; starfish, clams, coral, etc.), and microscopic plants and animals (microfossils). They are valuable, nonrenewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. Fossils can be used to determine the relative ages of the depositional layers in which they occur and of the geologic events that created those deposits. The age, abundance, and distribution of fossils depend on the geologic formation in which they occur and the topography of the area in which they are exposed. The geologic environments within which the plants or animals became fossilized usually were quite different from the present environments in which the geologic formations now exist.

Holocene alluvium (such as that found at a depth of at least 15 feet of surface soils at the Project site) can contain remains of plants and animals; however, generally not enough time has passed for the remains to become fossilized. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010). In addition, the remains are conspecific (generally of the same species) with modern species and are usually not considered scientifically important. Therefore, the surface soils at the Project site are considered to have no potential for paleontological resources.

3.8.1.3 Regulatory Setting

Federal

The federal Clean Water Act and subsequent amendments, under the enforcement authority of the U.S. Environmental Protection Agency (USEPA), was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The purpose of the Act is to protect and maintain the quality and integrity of the nation's waters by requiring states to develop and implement state water plans and policies. The Act also sets water quality standards for surface waters and established the National Pollutant Discharge Elimination System (NPDES) program to protect water quality. See, for example, Clean Water Act Section 401, which governs water quality certifications; Section 402, which outlines the program, including Section 402(p), which governs stormwater permitting; Section 404, which requires U.S. Army Corps of Engineers' authorization prior to discharging dredged or fill material into the waters of the United States; and Section 303(d), which authorizes USEPA to assist states, territories and authorized tribes in listing water quality impaired waters and developing Total Maximum Daily Loads (TMDLs) for such water bodies. The Clean Water Act authorizes the USEPA to implement pollution control programs such as setting wastewater standards for industry. In California, implementation and enforcement of it is conducted through the California State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs).

National Pollutant Discharge Elimination System (NPDES) Permit

Section 402 of the Clean Water Act contains the NPDES permit system, which regulates municipal and industrial point discharges to surface waters of the U.S. Each NPDES permit for point discharges contains limits on allowable concentrations of pollutants contained in discharges.

The NPDES program also regulates non-point source (e.g., stormwater) pollutants in discharges. Non-point sources are diffuse and originate over a wide area rather than from a definable point. The goal of NPDES stormwater regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" using structural and non-structural best management practices (BMPs). BMPs can include the development and implementation of various practices including educational measures (workshops informing public of what impacts results when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures, and structural measures (e.g., silt fences, straw wattle, grass swales, and detention ponds). The NPDES permits that apply to the Project include the Construction General Permit, as described further below.

National Electric Safety Code

Design for transmission lines must adhere to the National Electric Safety Code. The Institute of Electrical and Electronics Engineers and American Society of Civil Engineers (ASCE) publishes guidance documents, including ASCE 74, Guidelines for Electrical Transmission Line Structural Loading, which states, "Transmission structures are not typically designed for vibration caused by earthquakes because these loads are less than that of wind/ice combinations." The exception to this general rule occurs if the tower is built in liquefiable materials, in which case the materials may not support the weight of the tower and tower foundation during a seismic event.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was enacted in 1972 to protect structures for human occupancy from the hazard of surface faulting. In accordance with the act, the State Geologist has established regulatory zones—called "earthquake fault zones"—around the surface traces of active faults and has published maps showing these zones. Buildings for human occupancy cannot be constructed across surface traces of faults that are determined to be active. Because many active faults are complex and consist of more than one branch that may experience ground surface rupture, earthquake fault zones extend approximately 200 to 500 feet on either side of the mapped fault trace.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones, and cities, counties, and other local permitting agencies to regulate certain development projects within these zones. For projects that would locate structures for human occupancy within designated Zones of Required Investigation, the Seismic Hazards Mapping Act requires project applicants to perform a site-specific geotechnical investigation to identify the potential site-specific seismic hazards and corrective measures, as appropriate, prior to receiving building permits. The CGS Guidelines for Evaluating and Mitigating Seismic Hazards (Special Publication 117A) provides guidance for evaluating and mitigating seismic hazards (CGS, 2008).

California Building Code

The California Building Standards Code (CBSC) (Title 24 California Code of Regulations) is the building code for California. The California Building Standards Commission maintains the CBSC and oversees processes and regulations related to the California building codes by California Building Standards Law. The CBSC is based on several criteria: standards adopted by states based on national model codes, national model codes adapted to meet California conditions, and standards passed by the California Legislature that address concerns specific to California. The purpose of the CBSC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. CBSC that consists of 13 parts, including Part 2 — the California Building Code (CBC).

The CBC establishes minimum standards related to structural strength, means of egress to facilities (entering and exiting), and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The provisions of the CBC apply to the construction, alteration, movement, replacement, repair, location, maintenance, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures throughout California and would apply to structures proposed on the Project site.

Relevant to the Project, Chapter 18 of the CBC covers the requirements of geotechnical investigations, including expansive soils (Section 1803); excavation, grading, and fills (Section 1804); load-bearing of soils (Section 1806); as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

For a given project, a geotechnical investigation based on the project design is required as part of the grading and construction permitting process. If a project is approved, then the project proponent would prepare a site-specific, design-level geotechnical report with recommendations for final project design. The design-level geotechnical report would include the results and recommendations of the preliminary geotechnical report, and would add further detail if needed to address the final project design and relevant mitigation measures identified in the California Environmental Quality Act (CEQA) document, conditions of approval or other agency requirements.

NPDES Construction General Permit

Construction associated with projects that would disturb more than 1 acre of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface, affecting the quality of stormwater discharges into waters of the U.S. are subject to the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2022-0057-DWQ, NPDES No. CAS000002), commonly referred to as the *Construction General Permit*. The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings; and linear underground projects, including installation of water pipelines and other utility lines.

The Construction General Permit requires that construction sites be assigned a Risk Level of 1 (low), 2 (medium), or 3 (high), based both on the sediment transport risk at the site and the receiving waters risk during periods of soil exposure (e.g., grading and site stabilization). The sediment risk level reflects the relative amount of sediment that could potentially be discharged to

receiving water bodies and is based on the nature of the construction activities and the location of the site relative to receiving water bodies. The receiving waters risk level reflects the risk to the receiving waters from the sediment discharge. Depending on the risk level, the construction projects could be subject to the following requirements:

- Effluent standards.
- Good site management "housekeeping."
- Non-stormwater management.
- Erosion and sediment controls.
- Run-on and runoff controls.
- Inspection, maintenance, and repair.
- Monitoring and reporting requirements.

The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific BMPs designed to prevent sediment and pollutants from contacting stormwater from moving off site into receiving waters. The BMPs fall into several categories, including erosion control, sediment control, waste management and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the Clean Water Act 303(d) list for sediment.

California Public Utilities Commission General Order 95

California Public Utilities Commission General Order (GO) 95 and the rules it contains govern the construction and reconstruction of overhead and underground electric lines by investor-owned utilities operating in California. Overhead electric line construction includes conductors or circuits added to crossarms, any element added to a pole, and the replacement of poles towers or other structures. GO 95's Rule 20.6 defines different classes of power lines to recognize relative hazards. These classes of lines and the relation of lines to each other and to objects over which they are constructed determine construction requirements. PG&E's infrastructural improvements described in Section 2.5.2, *Summary of PG&E Components*, in Chapter 2, *Project Description*, would be subject to California Public Utilities Commission GO 95.

Local

Fresno County Solar Guidelines

Fresno County has prepared Solar Facility Guidelines (Fresno County 2017) that contain the following requirement relevant to geology and soils:

4. 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

Fresno County General Plan

Planning for growth and development requires the consideration of a wide range of public safety issues. Some safety hazards are naturally induced, such as seismic and geologic hazards, flooding, and wildland fire hazards. Others are the result of natural hazards that are exacerbated by human activity and alteration of the natural environment (such as dam failure, urban fires, and development in sensitive areas such as floodplains or areas subject to erosion and landslides) or are manmade (such as airport crash hazards, hazardous materials, and crime). The Fresno County General Plan contains a number of goals and policies related to geology, soils, and paleontological resources in the Health and Safety and Open Space and Conservation elements (Fresno County 2024).

Goal HS-D: To minimize the loss of life, injury, and property damage due to seismic and geologic hazards.

Policy HS-D.1: Geologic Investigations and Knowledge. The County shall continue to support scientific geologic investigations that refine, enlarge, and improve the body of knowledge on active fault zones, unstable areas, severe groundshaking, avalanche potential, and other hazardous geologic conditions in Fresno County.

Policy HS-D.2: Geologic Hazard Mitigation Planning. The County shall ensure that the General Plan and/or County Ordinance Code is revised, as necessary, to incorporate geologic hazard areas formally designated by the State Geologist (e.g., Earthquake Fault Zones and Seismic Hazard Zones). Development in such areas, including public infrastructure projects, shall not be allowed until compliance with the investigation and mitigation requirements established by the State Geologist can be demonstrated.

Policy HS-D.3: Soils and Geologic-Seismic Analysis. 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, ground shaking, lateral spreading, lurch cracking, fault creep, liquefaction, subsidence, settlement, landslides, mudslides, unstable slopes, or avalanche).

Policy HS-D.4: Soils and Geologic-seismic Structure Design. 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 California 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: Alquist-Priolo Earthquake Fault Act. 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.7: Soils Report. 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.8: Minimize Soil Erosion. 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.

Policy HS-D.9: Drainage Plans. The County shall require the preparation of drainage plans for development or public infrastructure projects in hillside areas to direct runoff and drainage away from unstable slopes.

Policy HS-D.10: Maximum Slope Requirements. The County shall not approve a County permit for new development, including public infrastructure projects where slopes are over thirty (30) percent unless it can be demonstrated by a California-registered civil engineer or engineering geologist that hazards to public safety will be reduced to acceptable levels.

Policy HS-D.11: Landslide Hazard Areas. In known or potential landslide hazard areas, the County shall prohibit avoidable alteration of land in a manner that could increase the hazard, including concentration of water through drainage, irrigation, or septic systems, undercutting the bases of slopes, removal of vegetative cover, and steepening of slopes.

Policy HS-D.12: Avalanche Hazard Areas. The County shall not approve a County permit for new development, including public infrastructure projects, in known or potential avalanche hazard areas unless it can be demonstrated by a California-registered engineer or engineering geologist that the structures will be safe under anticipated snow loads and avalanche conditions.

Policy HS-D.13: Geologic Hazard Areas Designations. Whenever zoning is employed to restrict the use of land subject to severe geologic hazards (e.g., landslides), the County shall designate parcels so restricted for open space uses.

Goal OS-J: To identify, protect, and enhance Fresno County's important historical, archeological, paleontological, geological, and cultural sites and their contributing environment, and promote and encourage preservation, restoration, and rehabilitation of Fresno County's historically significant resources in order to promote historical awareness, community identify, and to recognize the county's valued assets that have contributed to past county events, trends, styles of architecture, and economy.

Policy OS-J.4: Cultural Resources Protection and Mitigation. The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archeological, tribal, paleontological, and cultural sites and resources. For projects requiring ground disturbance and located within a high or moderate cultural sensitivity areas, a cultural resources technical report may be warranted, including accurate archival research and site surveys conducted by qualified cultural resources practitioners. The need to prepare such studies shall be determined based on the tribal consultation process and initial outreach to local or state information centers.

Policy OS-J.12: Geologic Resource Preservation. In approving new development, the County shall ensure, to the maximum extent practicable, that the location, siting, and design of any project be subordinate to significant geologic resources.

Policy OS-J.16: Permanent Geologic Resource Protection. The County shall encourage State and Federal agencies to purchase significant geologic resources for permanent protection.

Local Area Management Program (LAMP)

The County of Fresno County Public Works and Planning Department (Planning Department) oversees (1) the design, installation, and operation of on-site wastewater treatment systems, (2) the management of non-discharging liquid waste systems, and (3) liquid waste dispersal requirements associated with land use modifications such as subdivisions, parcel splits, and lot line adjustments (Fresno County 2017). The Planning Department regulates these elements within the unincorporated areas of Fresno County.

3.8.2 Significance Criteria

The Project would result in significant impacts related to geology, soils, and paleontological resources 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. Refer to Division of Mines and Geology Special Publication 42;
   ii. Strong seismic ground shaking;
   iii. Seismic-related ground failure, including liquefaction; 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[2] 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;

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

[2] The CBC no longer includes a Table 18-1-B, which is still cited in the Appendix G criterion. Instead, Section 1803.5.3 of the CBC describes the criteria for analyzing expansive soils.

3.8.3 Direct and Indirect Effects

3.8.3.1 Methodology

This environmental analysis of the Project's potential impacts related to geology, soils, and paleontological resources is based on a review of the results of the site-specific preliminary geotechnical investigation, the bioretention design report, a review of literature and database research (geologic, seismic, and soils, and paleontological resources reports and maps), and the County's General Plan; information regarding proposed construction details, potential uses, and associated operations at the Project are based on information provided in Chapter 2, *Project Description*.

3.8.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a.i) Whether the Project would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.

The Heartland Solar Project would not directly or indirectly cause or expose people or structures to injury, death, or damage from fault rupture because the Heartland Solar Project site does not intersect any active faults, as determined by CGS mapping performed in accordance with the Alquist-Priolo Earthquake Fault Zoning Act. Therefore, the Project would have no impact regarding criterion a.i). (*No Impact*)

Mitigation: None required.

Criteria a.ii and a.iii) 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 or ground failure, including liquefaction.

Impact 3.8-1: The Heartland Solar Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking and seismic-induced ground failure, including liquefaction. (*Less-than-Significant Impact*)

The Heartland Solar Project site would be subject to moderate to severe seismic ground shaking due to the proximity to the Ortigalita and San Andreas fault zones. Should strong seismic ground shaking occur at the Project site, damage to facility components such as the solar facility's proposed photovoltaic modules, operations and maintenance building, or storage tanks could result in potential damage and/or injury to on-site staff. However, fine-grained, cohesive soils are anticipated at the Project site; therefore, the potential for liquefaction is expected to be low.

The Heartland Solar Project would be subject to the seismic design criteria of the CBC and local building codes, which require that all improvements be constructed to withstand anticipated ground shaking from regional fault sources. The CBC and local code regulations (see

Section 3.8.1.3, *Regulatory Setting*) would require the Applicant to retain a licensed geotechnical engineer to design the Project components to resist damage from seismic-induced ground shaking and seismic-induced ground failures (e.g., liquefaction, lateral spreading, landslides, and settlement). All construction would adhere to the specifications, procedures, and site conditions contained in the final design plans, which would comply with the seismic recommendations of a California-registered, professional geotechnical engineer in accordance with the CBC and local building codes. The final structural design would be subject to approval and follow-up inspection by Fresno County Building Officials. Final design requirements would be provided to the on-site construction supervisor and the local Building Inspector to ensure compliance. Adherence to the applicable CBC, local code requirements, and local agency enforcement would ensure that the Project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking and seismic-induced ground failure, including liquefaction, lateral spreading, landslides, and settlement. Therefore, impacts related to ground shaking and seismic-induced ground failures, including liquefaction, during Project construction, operation and maintenance, or decommissioning would be **less than significant**.

Mitigation: None required.

Criterion a.iv) Whether the Project would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides.

The Heartland Solar Project site has nearly flat topography. There are no mapped landslides on or around the site. For these reasons, the potential for landslide hazards at the Project site is very low, and there would be no impact to landslides from Project construction, operation and maintenance, or decommissioning. (*No Impact*).

Mitigation: None required.

Criterion b) Whether the Project would result in substantial soil erosion or loss of topsoil.

Impact 3.8-2: The Heartland Solar Project would not result in substantial soil erosion or loss of topsoil. *(Less-than-Significant Impact*)

During construction and decommissioning, the Heartland Solar Project would include ground-disturbing activities that could increase the risk of erosion or sediment transport, if not managed appropriately. The Project is proposed on relatively flat topography and would not involve grading steep slopes; however, construction activities could result in soil erosion during excavation, grading, trenching, and soil stockpiling. Because such activities would exceed 1 acre during construction, the Heartland Solar Project would be required to comply with the Construction General Permit described in Section 3.8.1.3, *Regulatory Setting*, under the heading *NPDES Construction General Permi*t. Compliance with the Construction General Permit would ensure that stormwater is managed to protect water quality and includes erosion control measures for construction sites as well as post-construction requirements. The Construction General Permit requires preparation and implementation of a SWPPP that identifies BMPs to control stormwater from construction work

sites and to prevent disturbed soils from moving off-site. The BMPs may include, but are not limited to, physical barriers to prevent erosion and sedimentation; construction of sedimentation basins; limitations on work periods during storm events; use of infiltration swales; protection of stockpiled materials; and other measures identified by a qualified SWPPP preparer that would substantially reduce or prevent erosion from occurring during construction. Given the relatively flat topography of the Project site and through compliance with independently enforceable regulatory requirements, the potential impacts of the Project associated with soil erosion and loss of topsoil during construction and decommissioning would be **less than significant**.

Activities that would occur during the Heartland Solar Project's operation and maintenance period also could increase the risk of erosion or sediment transport if not managed appropriately. Such activities could include repairs or replacement of equipment. However, the Project would be required to comply with the post-construction runoff reduction standards of the Construction General Permit, which require the Project to replicate the pre-project water balance (volume of rainfall that ends up as runoff) for the smallest storms up to the 85th percentile storm event. The Project owner also would be required to implement BMPs to reduce pollutants in storm water discharges that are reasonably foreseeable after all construction phases have been completed. Compliance with the post-construction Construction General Permit and WDR conditions during the operation and maintenance period would prevent significant impacts related to soil erosion and topsoil loss. Impacts would be **less than significant**.

Mitigation: None required.

Criterion 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 3.8-3: The Heartland Solar Project would not 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. (*Less-than-Significant Impact*)

As analyzed in the context of Impact 3.8-1, the Heartland Solar Project would result in a less than significant impact related to liquefaction, lateral spreading, landslide, or other seismic-induced ground failure. The area is relatively flat with no evidence of landslides, and the consolidated sediments underlying the Project site would be unlikely to destabilize during Project construction, operation and maintenance, or decommissioning.

The Heartland Solar Project site is in an area that has experienced moderate land subsidence in the past, and the San Joaquin Valley has a history of land subsidence due to groundwater pumping. The local groundwater sustainability agency is required to address undesirable effects of groundwater pumping, including subsidence, as part of groundwater management in compliance with the Sustainable Groundwater Management Act of 2014 (see Section 3.11, *Hydrology and Water Quality*, for additional information about potential groundwater impacts). Additionally, no dewatering activities are planned as part of the Project.

The Heartland Solar Project would be designed to comply with the CBC and local building codes to withstand the effects of settlement or collapsible soils. Areas of soft ground can be addressed by removal and/or replacement of soils as engineered compacted fill in accordance with building code requirements. With adherence to all applicable building code regulations, the Project would avoid causing significant impacts to proposed improvements resulting from unstable soils, and potential impacts would be **less than significant**.

Mitigation: None required.

Criterion d) Whether the Project would be located on expansive soil, creating substantial direct or indirect risks to life or property.

Impact 3.8-4: The Heartland Solar Project would not be located on expansive soil, creating substantial direct or indirect risks to life or property. (*Less-than-Significant Impact*)

As described in Section 3.8.1.2, *Environmental Setting*, the soil underlying the Project site has a moderate to very high expansion potential. The potential impacts to life or property associated with expansive soils could be significant if not addressed appropriately. The Project design and construction activities would be required to comply with CBC and local code requirements and would employ standard engineering and building practices common to construction projects throughout California (e.g., soil removal and replacement with engineered soil or treatment of expansive soils) that are also consistent with CBC requirements.

The required design-level geotechnical investigation (described above) would identify any expansive soils within the Project site and provide recommendations to ensure that all foundations and other below-ground infrastructure would not be adversely affected by expansive soils. Adherence to design requirements consistent with the most updated version of the CBC, local codes, and site-specific geotechnical report would ensure a **less-than-significant** impact related to expansive soils.

Mitigation: None required.

Criterion e) Whether the Project would have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater.

Impact 3.8-5: The Heartland Solar Project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater. (*Less-than-Significant Impact)*

Sanitary waste would be disposed of in a septic system. The capacity of the septic tanks and dimensions of the leach fields would be determined based on anticipated use and site-specific soil conditions among other factors, as required by the Fresno County LAMP (Fresno County 2017).

A septic system permit would be required by the Fresno County Public Works and Planning Department, which oversees the design, installation, and operation of on-site wastewater treatment systems in unincorporated County areas. Adherence to requirements of the septic system permit would ensure the on-site septic system would be installed properly and within adequate soils, and the Project would not introduce an environmental or public health hazard by building septic tanks or other wastewater disposal systems in soils that are incapable of adequately supporting such systems. The Project would result in a **less-than-significant** impact related to inadequate soils supporting an on-site septic system.

Mitigation: None required.

Criterion f) Whether the Project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact 3.8-6: The Heartland Solar Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (*Less-than-Significant with Mitigation Incorporated*)

The Holocene alluvium and deeper Pleistocene sediments would not be considered a unique geological resource, resulting in no impact.

As discussed in Section 3.8.1.2, *Environmental Setting*, excavation into deeper soils at the Heartland Solar Project site may encounter geologic materials with paleontological resources. Project-related excavation to install the steel supports for the solar panels is proposed at depths of up to 15 feet below ground surface. Soils up to this depth also may be disturbed during Project decommissioning. Negligible surface disturbance is anticipated during the operation and maintenance phase of the Project. Because the Project would not disturb soils below this depth, it would have no effect on Holocene alluvium found below 10 feet.

However, supports for the substation foundation and Gen-tie line would disturb sediments up to 50 feet deep and may encounter paleontological resources in older Holocene alluvium and older Pleistocene-age alluvial deposits at the Project site. While the potential to encounter significant paleontological resources is considered low, a potentially significant impact could result if paleontological resources are encountered and inadvertently destroyed during ground-disturbing activities.

In the event of an unanticipated fossil discovery during ground-disturbing activities, the severity of the impact would be reduced to a less than significant level by the implementation of **Mitigation Measure 3.8-6: Unanticipated Fossil Discovery**, which would require the development of a Paleontological Worker Education and Awareness Program, and would require that work halt in the vicinity of any potential find until a qualified paleontologist can make an assessment and provide further recommendations.

Mitigation Measure 3.8-6: Unanticipated Fossil Discovery

Prior to any ground disturbing activities, the Project owner shall develop and implement a Paleontological Worker Education and Awareness Program. If paleontological resources are discovered during ground-disturbing activities (e.g., during Project construction or decommissioning), all earthwork or other types of ground disturbance within 50 feet of the find shall stop immediately until a qualified professional paleontologist meeting the standards of the SVP can assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the paleontologist may record the find and allow work to continue or recommend salvage and recovery of the fossil. The paleontologist may also propose modifications to the stop-work radius based on the nature of the find, site geology, and the activities occurring on the site. If treatment and salvage is required, recommendations will be consistent with the standards of the SVP that are current as of the discovery and with currently-accepted scientific practice. The current standards of the SVP are set forth in the SVP's 2010 *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*, as prepared by the SVP's Impact Mitigation Guidelines Revision Committee. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds.

Significance after Mitigation: Less than significant. The implementation of Mitigation Measure 3.8-6 requires the development and implementation of a worker environmental awareness program, which would act to educate all workers of the potential to encounter fossils during construction activities and proper procedures to follow in the event of a discovery. In the event of a significant discovery, a professional paleontologist would be retained to assess the find and advise on recovery, salvage, and treatment of the discovery. If the discovery is deemed a significant find, proper procedures would be in place to unearth the find and have it treated and housed in an accredited museum or university. Adherence to Mitigation Measure 3.8-6 would ensure potential impacts on unique paleontological resources would be less than significant.

3.8.3.3 Direct and Indirect Effects of the PG&E Components

Impact 3.8-7: The PG&E Components could have an adverse impact on geology, soils, or paleontological resources. (*Less-than-Significant Impact*)

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the off-site point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Unless constructed underground, an above-ground gen-tie line would be constructed with approximately three poles, to be owned and operated by PG&E. The construction activities associated with the PG&E Components would be required to comply with, and adhere to, the same design criteria included in the CBC, if applicable, as the rest of the Project components. The

PG&E gen-tie line also would be required to comply with CPUC General Order 95. Development of the improvements to the existing Tranquillity Switching Station also would comply with applicable building requirements and other BMPs implemented by PG&E during construction activities, including standard measures for paleontological resources sensitivity training for construction workers, and identifying protocols for inadvertent discovery of a paleontological resource. Impacts of the PG&E Components on geology and soil resources and unique paleontological resources would be less than significant.

PG&E proposes to implement the following construction measures if paleontological resources are discovered during ground-disturbing activities. In such an event, PG&E or its contractor(s) shall immediately stop all earthwork or other types of ground disturbance within 50 feet of the find until a qualified professional paleontologist meeting the standards of the SVP can assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, as well as the safety and practicality of fossil recovery, the paleontologist may record the find and allow work to continue or recommend salvage and recovery of the fossil. The paleontologist may also propose modifications to the stop-work radius based on the nature of the find, site geology, and the activities occurring on the site. If a fossil is discovered in a location or workspace where it is not safe to recover them or recovery would be impractical (e.g., deep within a shaft drilled for a footing, where more severe environmental damage and costs will incur from the sloping necessary to safely recover fossils) then recovery will not be required. If treatment and salvage is required, recommendations will be consistent with the standards of the SVP that are current as of the discovery and with currently-accepted scientific practice. The current standards of the SVP are set forth in the SVP's 2010 *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*, as prepared by the SVP's Impact Mitigation Guidelines Revision Committee. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds.

Mitigation: None required.

3.8.4 Cumulative Effects Analysis

This section presents an analysis of the cumulative effects of the Project in combination with other past, present, and reasonably foreseeable future projects that could cause cumulatively considerable impacts. Significant cumulative impacts related to geology, soils, and paleontological resources could occur if the incremental impacts of the Project combined with the incremental impacts of one or more projects identified in Section 3.1.3, *Cumulative Effects Approach*, in the same geographic area at the same time.

The geographic scope of analysis for cumulative geology and soils impacts encompasses and is limited to the Project site and its immediately adjacent area. This is because impacts relative to geology and soils are generally site-specific and depend on the nature and extent of the geologic hazard, and existing and future soil and groundwater conditions. For example, the effects of erosion would tend to be limited to the localized area of a project and could only be cumulative if erosion occurred as the result of two or more adjacent projects that spatially overlapped.

The timeframe during which the Project could contribute to cumulative geology and soils effects would commence with the initiation of on-site work. For the proposed solar facility, cumulative effects could continue to occur until on-site decommissioning and reclamation activities cease: a period of approximately 30 years. For the PG&E Components, cumulative effects could continue in perpetuity, since those components are not proposed to be decommissioned.

3.8.4.1 Cumulative Effects of the Heartland Solar Project

Criterion a.i)

As analyzed in Section 3.8.3, *Direct and Indirect Effects*, the Heartland Solar Project would have no impact due to the exposure of people or structures to injury, death, or damage from fault rupture because the Project site does not intersect any active faults. Therefore, the Project could not cause or contribute to any cumulative effect relating to these considerations. (*No Impact*)

Mitigation: None required.

Criteria a.ii and a.iii)

Impact 3.8-1c: The Heartland Solar Project would not cause or contribute to any significant cumulative effect due to the risk of loss, injury, or death involving strong seismic ground shaking and seismic-induced ground failure, including liquefaction. (*Less-than-Significant Impact*)

Heartland Solar Project impacts related to ground shaking and seismic-induced ground failures would be less than significant. CBC and local building regulations and standards, described in Section 3.8.1.3, *Regulatory Setting*, have been established to address risks from seismic shaking and seismic-induced ground failures. Provisions of the CBC apply statewide and the local building code would govern relevant activities. As explained in Section 3.8.1.3, the purpose of the CBC and the County code is to regulate and control the design, construction, quality of materials, use/ occupancy, location, and maintenance of all buildings and structures; by design, these codes are intended to reduce the cumulative risks from buildings and structures. All projects, including those listed on Table 3.1-1 would be required to comply with applicable provisions of these laws and regulations. Therefore, based on compliance with these requirements, the less-than-significant incremental impact of the Project, when combined with incremental impacts of other projects within the relevant area, would not cause a significant cumulative impact related to seismic shaking and seismic-induced ground failures.

Mitigation: None required.

Criterion a.iv

As analyzed in Section 3.8.3, *Direct and Indirect Effects*, the Heartland Solar Project would have no impact due to landslides. Therefore, the Project would not cause or contribute to any cumulative effect regarding criterion a.iv). (*No Impact*)

Mitigation: None required.

Criterion b)

Impact 3.8-2c: The Heartland Solar Project would not cause or contribute to any significant cumulative effect resulting in substantial soil erosion or loss of topsoil. *(Less-than-Significant Impact*)

The Heartland Solar Project's incremental impact would be less than significant based on compliance with the Construction General Permit, which would require the implementation of BMPs to address construction and post-construction stormwater runoff to prevent erosion and loss of topsoil. Construction General Permit requirements apply to projects statewide, including relevant projects identified in Section 3.1.3, *Cumulative Effects Approach*, including nearby projects that have been approved but not yet constructed or are under construction. Compliance with Construction General Permit requirements would effectively manage the collective potential for erosion impacts to occur. Therefore, the incremental less-than-significant impact of the Project, combined with impacts of other projects in the area, would not cause a significant cumulative impact related to erosion or loss of topsoil. A less-than-significant cumulative effect would result.

Mitigation: None required.

Criterion c)

Impact 3.8-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to its location on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. (*Less-than-Significant Impact*)

The Heartland Solar Project's incremental impact relating to criterion c) would be less than significant based on compliance with the State and local building regulations, including the CBC and the local building code. Relevant requirements have been established to address unstable geologic units or soil and apply statewide, including in the geographic area of cumulative consideration. The Project and cumulative projects would be required to comply with applicable provisions; compliance with them would effectively reduce the potential for impacts. As explained in Section 3.8.1.3, *Regulatory Setting*, the purpose of the CBC and local codes is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures; by design, they are intended to reduce the cumulative risks from buildings and structures. Therefore, based on compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the area would not cause a significant cumulative impact related to unstable geologic units or soil, and the Project's contribution to cumulative effects would be less than significant.

Mitigation: None required.

Criterion d)

Impact 3.8-4c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to being located on expansive soil. (*Less-than-Significant Impact*)

The Heartland Solar Project's incremental impact would be less than significant based on compliance with the State and local building regulations and standards described in Section

3.8.1.3, *Regulatory Setting*, because these standards have been established to address expansive soil. The Project and cumulative projects would be required to comply with applicable provisions of the CBC and local building codes. Through compliance with these requirements, the potential for impacts would be reduced. As explained in Section 3.8.1.3, the purpose of the CBC and local codes is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures; by design, they are intended to reduce the cumulative risks from buildings and structures. Therefore, based on compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the area would not cause a significant cumulative impact related to expansive soil. The cumulative impact would be less than significant.

Mitigation: None required.

Criterion e)

Impact 3.8-5c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to on-site soils being incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater. (*Less-than-Significant Impact*)

The Heartland Solar Project's incremental impact would be less than significant based on compliance with the State and local building regulations and standards described in the Section 3.8.1.3, *Regulatory Setting*, which have been established to address septic tanks or alternative wastewater disposal systems. The Project and cumulative projects would be required to comply with applicable provisions of the Fresno County LAMP and Fresno County Public Works and Planning Department requirements. As explained in Section 3.8.1.3, *Regulatory Setting*, the Fresno County LAMP and the Fresno County Public Works and Planning Department regulate the installation and operation of all septic tanks or alternative wastewater disposal systems within their jurisdiction. By design, related requirements are intended to reduce the cumulative risks from septic tanks or alternative wastewater disposal systems. Therefore, based on compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the area would not cause or contribute to a significant cumulative impact. The cumulative effect would be less than significant.

Mitigation: None required.

Criterion f)

Impact 3.8-6c: The Heartland Solar Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (*Less-than-Significant Impact with Mitigation Incorporated)*

As discussed above in Impact 3.8-6, the Holocene alluvium and deeper Pleistocene sediments would not be considered a unique geological resource, resulting in no impact.

As discussed in Section 3.8.1.2, *Environmental Setting*, excavation into deeper soils at the Heartland Solar Project site may encounter geologic materials with paleontological resources. Similarly, cumulative projects that excavate or disturb deeper sediments may encounter older

sediments with paleontological resources. As with the Heartland Solar Project, cumulative projects that disturb deeper soil are expected to be subject to mitigation comparable to **Mitigation Measure 3.8-6**, (see, e.g., the Luna Valley Solar Project EIR [Fresno County 2021]). Therefore, cumulative impacts would be less than significant and the Project's incremental contribution would not be cumulatively considerable for unique paleontological resources.

Mitigation: Implement Mitigation Measure 3.8-6.

Significance After Mitigation: Less than significant. The implementation of Mitigation Measure 3.8-6 would reduce impacts to a less-than-significant level.

3.8.4.2 Cumulative Effects of the PG&E Components

Regarding criteria a.1 and a.iv and regarding criterion e), the PG&E Components would have no impact. As analyzed in Section 3.8.3, *Direct and Indirect Effects*, the PG&E Components would have no impact due to the exposure of people or structures to injury, death, or damage from fault rupture because the area where the PG&E Components would be constructed, operated and maintained does not intersect any active faults. Therefore, the PG&E Components could not cause or contribute to any cumulative effect relating to criterion a.i. The PG&E Components also would have no impact due to landslides, and thus would not cause or contribute to any cumulative effect regarding criterion a.iv). The PG&E Components would not include the use of septic tanks or an alternative wastewater disposal system. Therefore, the PG&E Components could not cause or contribute to any cumulative effect relating to criterion e). (*No Impact*)

Regarding criteria a.ii and a.iii), the PG&E Components would cause a less-than-significant impact. CBC and local building regulations and standards, described in Section 3.8.1.3, *Regulatory Setting*, have been established to address risks from seismic shaking and seismic-induced ground failures. Provisions of the CBC apply statewide and the local building code would govern relevant activities. As explained in Section 3.8.1.3, the purpose of the CBC and the County code is to regulate and control the design, construction, quality of materials, use/ occupancy, location, and maintenance of all buildings and structures; by design, these codes are intended to reduce the cumulative risks from buildings and structures. All projects, including those listed on Table 3.1-1, would be required to comply with applicable provisions of these laws and regulations. Therefore, based on compliance with these requirements, the less-than-significant incremental impact of the PG&E Components, when combined with incremental impacts of other projects within the relevant area, would not cause a significant cumulative impact related to seismic shaking and seismic-induced ground failures. (*Less-than-Significant Impact*)

Regarding criterion b), the PG&E Components would not cause or contribute to any significant cumulative effect resulting in substantial soil erosion or loss of topsoil, and would have a less-than-significant impact in this regard. Further, Construction General Permit requirements apply to projects statewide which impact more than one acre, including relevant projects identified in Section 3.1.3, *Cumulative Effects Approach*, including nearby projects that have been approved but not yet constructed or are under construction. Compliance with Construction General Permit requirements would effectively manage the collective potential for erosion impacts to occur. Therefore, the incremental less-than-significant impact of the PG&E Components, combined with

impacts of other projects in the area, would not cause a significant cumulative impact related to erosion or loss of topsoil. A less-than-significant cumulative effect would result. (*Less-than-Significant Impact*)

Regarding criterion c), the PG&E Components would not cause or contribute to a significant cumulative effect due to their location on a geologic unit or soil that is unstable, or that would become unstable as a result of the PG&E Components; a less-than-significant cumulative impact would result based on compliance with the State and local building regulations, including the CBC and the local building code. Relevant requirements have been established to address unstable geologic units or soil and apply statewide, including in the geographic area of cumulative consideration. The PG&E Components and cumulative projects would be required to comply with applicable provisions; compliance with them would effectively reduce the potential for impacts. As explained in Section 3.8.1.3, *Regulatory Setting*, the purpose of the CBC and local codes is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures; by design, they are intended to reduce the cumulative risks from buildings and structures. Therefore, based on compliance with these requirements, the incremental impacts of the PG&E Components combined with impacts of other projects in the area would not cause a significant cumulative impact related to unstable geologic units or soil, and the PG&E Components' contribution to cumulative effects would be less than significant.

Regarding criterion d), the PG&E Components' incremental impact would be less than significant based on compliance with the State and local building regulations and standards described in Section 3.8.1.3, *Regulatory Setting*, because these standards have been established to address expansive soil. The PG&E Components and cumulative projects would be required to comply with applicable provisions of the CBC and local building codes. Through compliance with these requirements, the potential for impacts would be reduced. As explained in Section 3.8.1.3, the purpose of the CBC and local codes is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures; by design, they are intended to reduce the cumulative risks from buildings and structures. Therefore, based on compliance with these requirements, the incremental impacts of the PG&E Components combined with impacts of other projects in the area would not cause a significant cumulative impact related to expansive soil. The cumulative impact would be less than significant.

Regarding criterion f), because, as discussed in the context of Impact 3.8-6, the PG&E Components would have no impact relating to Holocene alluvium and deeper Pleistocene sediments, they could not cause or contribute to any significant cumulative effect regarding these resources.

As discussed in Section 3.8.1.2, *Environmental Setting*, excavation into deeper soils in areas where work on the PG&E Components occurs could encounter geologic materials with paleontological resources, if present. Similarly, cumulative projects that excavate or disturb deeper sediments also may encounter older sediments with paleontological resources. Cumulative projects that disturb deeper soil may encounter unique paleontological resources are expected to be subject to mitigation addressing unanticipated discoveries. Further, PG&E would implement BMPs during construction activities, including standard measures for paleontological resources

sensitivity training for construction workers and identifying protocols for inadvertent discovery of a paleontological resource. Accordingly, cumulative impacts would be less than significant, and the PG&E Components' incremental contribution would not be cumulatively considerable.

Mitigation: None required.

3.8.5 References

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3.9 Greenhouse Gas Emissions

This section identifies and evaluates issues related to greenhouse gas (GHG) emissions, including the potential for a conflict between the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project) and an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

This analysis is based in part on the *Air Quality and Greenhouse Gas Emissions Technical Report* (Appendix D1). The technical report includes analysis of the proposed solar energy generation and energy storage facility (solar facility) and the PG&E Components. The preparers of this Draft EIR independently reviewed this, and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance, in combination with other materials included in the formal record, in the preparation of this EIR. In addition, the analysis is also informed by indirect emissions estimates prepared by Environmental Science Associates that would be associated with the battery energy storage system (BESS) charging (Appendix D2).

The County received scoping comments from the San Joaquin Valley Air Pollution Control District (SJVAPCD) pertaining to air quality emissions but no comments from the SJVAPCD or others specifically regarding GHG emissions (Appendix A, *Scoping Report*). SJVAPCD input regarding air quality is considered in Section 3.4, *Air Quality*.

3.9.1 Setting

3.9.1.1 Study Area

GHG emissions and climate change are a cumulative global issue. The California Air Resources Board (CARB) and U.S. Environmental Protection Agency (USEPA) regulate GHG emissions within California and the United States, respectively. While CARB has the primary regulatory responsibility within California for GHG emissions, local agencies have authority to adopt policies for GHG emissions reductions. CARB has divided California into regional air basins. The Project site is located in the San Joaquin Valley Air Basin (Air Basin), which is under the jurisdiction of the SJVAPCD. Though GHG emissions impacts are global in nature, the study areas for purposes of this analysis of potential GHG emissions-related impacts are the Air Basin and the state.

3.9.1.2 Environmental Setting

Gases that trap heat in the atmosphere are known as greenhouse gases or “GHGs.” GHGs allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation, causing the air in the atmosphere to warm up. The process is similar to the effect greenhouses have in raising their internal temperature. Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates Earth’s temperature; however, 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 Earth's atmosphere and has contributed 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 that 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 (PFCs), and hydrofluorocarbons (HFCs). CO_2 is the most common reference gas for climate change. To account for the different warming potential of GHGs, GHG emissions are often 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 comprising a small fraction of the total GHGs emitted annually world-wide, is a much more potent GHG with 23,900 times the global warming potential (GWP) as CO_2, which has a GWP of one. In emission inventories, GHG emissions are typically reported as metric tons of CO_2e (MT CO_2e). CO_2e is calculated as the product of the mass emitted of a given GHG and its specific GWP. CO_2 accounts for the majority of GHG emissions in CO_2e, both naturally occurring and from human activity in general.

In recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans. Since the 1950s, the atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen. Changes in many extreme weather and climate events also have been observed since approximately 1950, including a decrease in cold temperature extremes, an increase in warm temperature extremes, an increase in extreme high sea levels, and an increase in the number of heavy precipitation events in several regions.

Surface temperature is projected to rise over the 21st century under all assessed emission scenarios. It is likely that heat waves will occur more often and last longer, and that extreme precipitation events will become more intense and frequent in many regions. The expectation is that the ocean will continue to warm and acidify, and the global mean sea level will continue to rise. Continued emission of GHGs will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive, and irreversible impacts for people and ecosystems. Limiting the risks of climate change would require immediate and deep reductions in GHG emissions (IPCC 2022).

In 2020, California produced approximately 369 million MT CO_2e, with the combustion of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2020, accounting for 37 percent of total GHG emissions in the state. This represents a decrease of 35 million MT CO_2e from 2019 likely associated with economic shutdowns, which occurred that year. This sector was followed by the industrial sector (20 percent), the electric power sector (including both in-state and out-of-state sources) (16 percent), the agriculture and forestry sector (9 percent), and the commercial and residential sector (11 percent). High GWP emissions from refrigerants and other sources made up 5 percent of the emissions while the waste sector resulted in 2 percent of the emissions (CARB 2022a).

3.9.1.3 Regulatory Setting

Federal

Massachusetts v. Environmental Protection Agency

In Massachusetts v. Environmental Protection Agency et al. (2007) 549 U.S. 497, California, other states, cities, and environmental organizations sued to require the USEPA to regulate GHGs as pollutants under the Clean Air Act. The U.S. Supreme Court ruled that GHGs fit within the Clean Air Act's definition of a pollutant and the USEPA had the authority to regulate GHGs. On December 7, 2009, the USEPA Administrator signed two findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- Endangerment Finding: The current and projected concentrations of six key GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Federal Vehicle Standards

In response to the U.S. Supreme Court ruling discussed above, the Bush Administration issued Executive Order (EO) 13432 in 2007 directing the USEPA, the U.S. Department of Transportation, and the U.S. Department of Energy to establish by 2008 regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines. In 2009, the National Highway Traffic Safety Administration (NHTSA) issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the USEPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012 through 2016.

In 2010, the Obama Administration issued a memorandum directing the Department of Transportation, Department of Energy, USEPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles (USEPA 2010). The proposed standards were designed to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021, and NHTSA intended to set standards for model years 2022 through 2025 in a future rulemaking. However, on January 12, 2017, the USEPA finalized its decision to maintain the current GHG emissions standards for model years 2022 through 2025 cars and light trucks (USEPA 2017).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the USEPA and NHTSA announced fuel economy and GHG standards for medium-duty and heavy-duty trucks for model years 2014 through 2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and recreational vehicles. According to the USEPA, this regulatory

program was designed to reduce GHG emissions and fuel consumption for the affected vehicles by 6 to 23 percent over the 2010 baselines.

In August 2016, the USEPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium-duty and heavy-duty trucks. The phase two program applies to vehicles with model years 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion metric tons and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (USEPA 2016).

State

The legal framework for GHG emission reduction in California has developed through executive orders, legislation, and regulations. The major components of California's climate change initiative are summarized below.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Arnold Schwarzenegger issued EO S-3-05, which announced target dates by which statewide GHG emissions would be progressively reduced. These included a reduction of GHG emissions to 2000 levels by 2010; a reduction of GHG emissions to 1990 levels by 2020; and a reduction of GHG emissions to 80 percent below 1990 levels by 2050. As discussed below, the 2020 reduction target was codified in 2006 as Assembly Bill 32 (AB 32). However, the 2050 reduction target has not been codified and the California Supreme Court has ruled that CEQA lead agencies are not required to use it as a significance threshold. Cleveland National Forest Foundation v. San Diego Association of Governments (2017) 3 Cal.5th 497.

Assembly Bill 32 and The Global Warming Solutions Act

In 2006, the California Legislature enacted Assembly Bill (AB) 32 (Health and Safety Code Division 25.5, Section 38500 et seq.), also known as the Global Warming Solutions Act. AB 32 required CARB to design and implement feasible and cost-effective emissions limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). AB 32 anticipated that the GHG reduction goals will be met, in part, through local government actions. CARB identified a GHG reduction target of 15 percent from current levels for local governments (municipal and community-wide) and noted that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. The initial AB 32 emissions reduction limit was achieved in 2017, 3 years prior to the 2020 goal.

Executive Order B-30-15

In 2015, Governor Edmund G. Brown Jr. issued EO B-30-15, establishing a GHG reduction target of 40 percent below 1990 levels by 2030. This goal was set to make it possible to reach the ultimate goal to reduce GHG emissions by 80 percent under 1990 levels by 2050. Specifically,

the EO directed CARB to update the Scoping Plan to express this 2030 target in metric tons. As discussed below, on September 8, 2016, Governor Brown signed Senate Bill (SB) 32, which codified the 2030 reduction target called for in EO B-30-15. CARB's Scoping Plans (discussed below) address the 2030 target.

Senate Bill 32 and Assembly Bill 197

Signed into law on September 8, 2016, SB 32 (Amendments to California Global Warming Solutions Act of 2006: Emission Limit) amended Health and Safety Code Division 25.5 and codified the 2030 target in EO B-30-15 (40 percent below 1990 levels by 2030). The 2030 target is intended to ensure that California remains on track to achieve the goal set forth by EO B-30-15 to reduce statewide GHG emissions by 2050 to 80 percent below 1990 levels. SB 32 states the intent of the legislature to continue to reduce GHGs for the protection of all areas of the state and especially the state's most disadvantaged communities, which are disproportionately impacted by the deleterious effects of climate change on public health. As companion legislation, AB 197 included provisions to ensure the benefits of State climate policies include disadvantaged communities.

Climate Change Scoping Plan

Pursuant to AB 32, CARB adopted the Climate Change Scoping Plan in December 2008 (re-approved by CARB on August 24, 2011). The plan must be updated at least every 5 years. The First Update to the Climate Change Scoping Plan described progress made to meet near-term emissions goals of AB 32, defined California's climate change priorities and activities for the next few years, and described the issues facing the State as it established a framework for achieving air quality and climate goals beyond the year 2020. On December 14, 2017, CARB approved the final version of California's 2017 Climate Change Scoping Plan, which outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels (CARB 2017). The 2017 Scoping Plan identifies key sectors of the implementation strategy, which includes improvements in low carbon energy industry, transportation sustainability, natural and working lands, waste management, and water. CARB determined that the statewide 2030 emissions limit target is 260 million MT CO_2e, and that further commitments will need to be made to achieve an additional reduction of 50 million MT CO_2e beyond current policies and programs.

The 2022 Climate Change Scoping Plan was adopted on December 15, 2022. It assesses progress towards achieving the SB 32 2030 target and lays out the path to achieve carbon neutrality by 2050 (CARB 2022b). Among other things, the actions and outcomes in the plan are intended to achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, and support for sustainable development. There are several goals related to transitioning existing energy production and transmission infrastructure to support the generation of clean energy, such as solar. CARB is committed to achieving zero-emission vehicles account for all the sales of light-duty vehicles by 2035 and heavy-duty vehicles by 2040.

Executive Order B-55-18

On September 10, 2018, Governor Brown issued EO B-55-18, committing California to total, economy-wide carbon neutrality by 2045. EO B-55-18 directs CARB to work with relevant State agencies to develop a framework to implement an accounting to track progress toward this goal.

California Building and Energy Efficiency Standards (Title 24)

The California Energy Commission (CEC) first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although the standards were not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and non-residential buildings subject to the standard. The standards are updated periodically (typically every 3 years) to allow for the consideration and inclusion of new energy efficiency technologies and methods.

On August 11, 2021, the CEC adopted 2022 Energy Code was approved by the California Building Standards Commission for inclusion into the California Building Standards Code. This update to the building code provides crucial steps in the state's progress toward 100 percent clean carbon neutrality by midcentury. The 2022 Energy Code builds on California's technology innovations, encouraging energy-efficient approaches to encourage building decarbonization, emphasizing in particular heat pumps for space heating and water heating. This set of energy codes also strengthens ventilation standards to improve indoor air quality and extends the benefits of photovoltaic and battery energy storage systems and other demand flexible technology to work in combinations with heat pumps to enable California buildings to be responsive to climate change. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.

California Green Buildings Standards Code

The California Green Building Standards Code, Part 11, Title 24, California Code of Regulations, known as CALGreen, is the first-in-the-nation mandatory green building standards code. In 2007, the California Building Standards Commission developed green building standards toward meeting the goals of AB 32. The CALGreen Code is intended to encourage more sustainable and environmentally friendly building practices, require low-pollution-emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. CALGreen covers multiple fields, with regulations encompassing energy efficiency, water conservation, sustainable building materials, site design, and air quality.

Since 2011, the CALGreen Code has been mandatory for all new buildings constructed in the state. Mandatory measures govern energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code is reviewed and updated on a three-year cycle. The 2022 CALGreen Code took effect on January 1, 2023.

Senate Bill 375

In addition to policy directly guided by AB 32, the legislature in 2008 enacted SB 375, which provides for regional coordination in land use and transportation planning and funding to help

meet the AB 32 GHG reduction goals. SB 375 aligns regional transportation planning efforts, regional GHG emissions reduction targets, and land use and housing allocations. SB 375 requires Regional Transportation Plans (RTPs) developed by the state's 18 metropolitan planning organizations (MPOs) to incorporate "Sustainable Communities Strategies" (SCS) that will achieve GHG emission reduction targets set by CARB and coordinate regional housing and transportation. The Fresno Council of Governments (FCOG) is the federally recognized MPO 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 has prepared the 2022 Regional Transportation Plan and Sustainable Communities Strategy for the region (FCOG 2022). In 2010, as part of its mandate under SB 375, CARB set specific GHG emission reduction targets for cars and light trucks for each of the state's 18 metropolitan planning organizations from a 2005 base year. The GHG targets set for the Fresno region in 2010 called for a 5 percent per capita reduction by 2020 and a 10 percent per capita reduction by 2035. SB 375 requires that FCOG demonstrate in its SCS that GHG emission reduction targets will be met for 2035. FCOG adopted its latest Regional Transportation Plan/Sustainable Communities Strategy in 2022.

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. Switchgear equipment containing SF_6 gas would be installed at the proposed on-site substation. Owners of such switchgear must not exceed maximum allowable annual emissions rates, which 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 3 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.

California Renewables Portfolio Standard

SB 1078 established the Renewables Portfolio Standard (RPS) in 2002, which required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from eligible renewable sources by 2017. SB 107 changed the target date to 2010. In November 2008, EO S-14-08 expanded the state's RPS goal to 33 percent renewable power by 2020. In September 2009, EO S-21-09 directed CARB (under its AB 32 authority) to enact regulations to help the state meet the 2020 goal of 33 percent renewable energy. The 33 percent by 2020 RPS goal was codified in April 2011 with SB X1-2. The updated RPS applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. SB 350, signed in October 2015, requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Most recently, SB 100, signed by Governor Brown on September 10, 2018, increases the RPS requirement to 60 percent eligible renewables by 2030 and 100 percent by 2045.

Local

San Joaquin Valley Air Pollution Control District

The SJVAPCD's Governing Board adopted the Climate Change Action Plan (CCAP) in August 2008. The CCAP 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.

On December 17, 2009, the SJVAPCD adopted Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA, and the policy: 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 (BPS), 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 BPS is a method of streamlining the CEQA process of determining significance and is not a required emission-reduction measure. Projects implementing BPS would be determined to have a less than cumulatively considerable impact. However, SJVAPCD's adopted BPS are specifically directed at reducing GHG emissions from stationary sources that require a permit from the SJVAPCD or from improved energy efficiency and reduced vehicle miles travelled associated with operations of development projects. Therefore, the adopted BPS would only apply to the proposed emergency generators, because these would be the only Project components that would be a stationary source of exhaust emissions and because the Project is not a typical development project that would consume a large amount of energy or result in a large increase in vehicle miles travelled.

Fresno Council of Governments

SB 375 requires MPOs to prepare a Sustainable Communities Strategy in their Regional Transportation Plans. As discussed above, the FCOG developed the 2022 Regional Transportation Plan and Sustainable Communities Strategy as the region's strategy to fulfill the requirements of SB 375. The 2022 Regional Transportation Plan and Sustainable Communities Strategy 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 2022 Regional Transportation Plan and Sustainable Communities Strategy 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 2022 Regional Transportation Plan and Sustainable Communities Strategy does not require that local general plans, specific plans, or zoning be consistent with it but provide incentives for consistency for governments and developers.

Fresno County 2024 General Plan

The Fresno County General Plan (updated in 2024) contains goals or policies related to climate change adaptation including those applicable to GHG emissions and associated climate change

effects. The General Plan requires the County to develop a countywide Climate Action Plan within 2 years of adoption of the General Plan, with the objective of meeting a GHG emissions reduction trajectory consistent with state law (Fresno County 2024).

> **Goal HS-G:** To improve the sustainability and resiliency of the County through continued efforts to reduce the causes of and adapt to climate change.
>
> > ***Policy HS-G.1:*** Reduce Impacts of Climate Change. The County shall support plans, standards, regulation, incentives, and investments based on sound science to reduce the impacts of climate change.
> >
> > ***Policy HS-G.3:*** Collaborate on Climate Adaptation. The County shall continue to collaborate with Federal, State, regional, and local agencies, businesses and property owners, and residents to reduce generation of GHG and other emissions that contribute to climate change and effectively implement climate change adaptation policies and programs.

3.9.2 Significance Criteria

The Project would result in a significant impact associated with GHG emissions if it would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.

3.9.3 Direct and Indirect Effects

3.9.3.1 Methodology

Pursuant to CEQA Guidelines Section 15064.4, lead agencies are to make a "good faith effort" to "describe, calculate or estimate" GHG emissions and to consider the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; or comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas 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 California Code of Regulations [Cal. Code Regs.] Section 15064.4[b][3]).

As described above, the SJVAPCD has adopted its Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA. For this Project, preparers of the EIR have evaluated the Project's GHG emissions relative to the GHG emissions that would be avoided under the Project, as well as the Project's compliance with applicable plans, policies, regulations, and requirements adopted for the reduction or mitigation of GHG emissions to determine whether the Project's GHG emissions would result in a significant impact.

Because impacts from construction activities occur over a relatively short-term period of time, they contribute a relatively small portion of the overall lifetime Project GHG emissions. It is common practice to amortize construction-related GHG emissions over a project's lifetime to

include these emissions as part of a project's annualized total emissions so that any GHG reduction measures would address construction GHG emissions as part of the operational GHG reduction strategies. As stated in Chapter 2, Project Description, construction of the Project could take up to 40 months. However, air quality emissions modeling assumed a shorter (18-month) period, which has the effect of concentrating emissions. Also as described in Chapter 2, the Project would have a useful life of 30 years. Therefore, the construction and decommissioning GHG emissions have been annualized over a 30-year period and considered along with the annual operational emissions.

The major source of GHG during construction would be the combustion of fuel in construction equipment, in vehicles used to haul materials, and in vehicles used by workers commuting to and from the site. Operational GHG emissions would primarily result from employee vehicle trips made to and from the site, SF_6 from leaking circuit breakers (if any), and energy storage system charging. GHG emissions from construction were derived from CalEEMod (v. 2022.1.1.29). Total construction and decommissioning emissions from the Project were annualized over the Project life and combined with the Project's long-term annual operational emissions derived from CalEEMod (v. 2022.1.1.29) and a spreadsheet model.

Project emissions of CO_2, CH_4, and N_2O were multiplied by their respective GWPs of 1, 25, and 298, and summed together to estimate CO_2e emissions (see Section 3.4, *Air Quality*, for a more detailed discussion of exhaust emission assumptions). Additionally, the Project's GHG emissions were modeled to include fugitive emissions of SF_6 from high-voltage circuit breakers at the on-site substation. The GWP of SF_6 is equivalent to 23,900 times that of CO_2. CO_2e emissions resulting from SF_6 gas leakage at the Project site were estimated for the circuit breakers, assuming a maximum leak rate of 1.0 percent per year. Emissions from SF_6 were then included in the operational area source emissions. The indirect emissions that would be associated with the BESS charging were calculated by applying GHG intensity factors per the net MWh that would be used and dispatched. See Appendix D2 for calculations and methodology.

The potential for the Project to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs was assessed by examining any potential conflicts of the Project with the GHG reduction measures related to implementation of the SB 32 goal, with CARB's Climate Change Scoping Plans, and with SB 375. Under the SJVAPCD's CEQA guidance for GHG emissions, a project would not have a significant GHG impact if it is consistent with an applicable qualified plan to reduce GHG emissions (SJVAPCD 2009a). The applicable qualified plans are FCOG's RTP/SCS and the 2022 Scoping Plan.

3.9.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Impact 3.9-1: The Heartland Solar Project would generate direct and indirect GHG emissions. (*Less-than-Significant Impact*)

Construction and Decommissioning

The Heartland Solar Project's construction activities would involve the use of off-road construction equipment, vendor trucks, and worker vehicles, all of which would emit GHGs. The Project construction was modeled to begin in 2026 and last over a period of 18 months. Emissions modeling assumes schedule overlap of several phases, including construction of the solar facility, commissioning of the solar facility, and construction of the BESS. However, the BESS portion of the Heartland Solar Project may be constructed after the solar portion of the Heartland Solar Project, which would result in an approximately 40-month construction duration. Project decommissioning was modeled to occur in 2050. **Table 3.9-1** presents construction emissions for the Project from 2026 through 2028, and decommissioning emissions for the Project in 2050, from on-site and off-site emission sources. Additional details on calculations and model output files can be found in the *Air Quality and Greenhouse Gas Emissions Technical Report* included as Appendix D1.

TABLE 3.9-1
ESTIMATED ANNUAL PROJECT CONSTRUCTION AND DECOMMISSIONING GREENHOUSE GAS EMISSIONS

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons Per Year			
2026	131.98	<0.01	<0.01	133.11
2027	3,308.88	0.07	0.11	3,347.01
2028	2,752.97	0.04	0.09	2,784.19
2050	280.08	<0.01	0.02	286.88
Project Total Construction and Decommissioning Emissions				6,551.18
Amortized Annual Emissions over 30 Years				218.37

NOTES: Construction emissions of N_2O have not been calculated for the Project, but it is estimated that total Project N_2O emissions would be approximately 0.1 MT per year, which would be equal to approximately 30 MT CO_2e. CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; MT = metric ton; N_2O = nitrous oxide

SOURCE: Based on Appendix A, Solar Facility Construction Emissions, Project Summary by Year, of Appendix D1.

As shown in Table 3.9-1, the Heartland Solar Project would generate total construction and decommissioning emissions of 6,551 MT CO_2e. When amortized over the 30-year Project lifetime, annual construction and decommissioning emissions would be 218 MT CO_2e per year.

Operation and Maintenance

The Heartland Solar Project's annual operational emissions are shown in **Table 3.9-2**. Operation and maintenance of the Project would generate GHG emissions primarily from energy storage system charging, motor vehicle trips to and from the Project site, and water use. An additional source of GHG emissions would be fugitive emissions from equipment containing SF_6 gas at the proposed on-site substation. Fugitive SF_6 emissions from the 138-kilovolt (kV) breakers at the proposed collector substation were estimated assuming a maximum annual leak rate of 1.0 percent. The Project must comply with CARB's Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear (17 Cal. Code Regs. Section 95350 et seq.), which requires that annual emissions of SF_6 not exceed 1.0 percent after 2020. This leakage rate and emissions from SF_6 is accounted for in the estimated Project GHG emissions shown in Table 3.9-2.

TABLE 3.9-2
ESTIMATED ANNUAL PROJECT OPERATIONAL GREENHOUSE GAS EMISSIONS

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons Per Year			
Fugitive SF_6	-	-	-	26.02
Electricity Use for BESS Charging	-	-	-	1,566.42
Mobile	39.26	<0.01	0.01	39.63
Water Supply and Wastewater	1.98	0.16	<0.01	6.09
			Total Operation Emissions	**1,638.16**

NOTES: BESS = battery energy storage system; CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide

SOURCES: Based on Appendix D1, Estimated Annual Project Operational Greenhouse Gas Emissions. Based on CalEEMod output for panel washing and the fugitive SF_6 calculation provided in Appendix A of Appendix D1 adjusted to account for a 1.0 percent leak rate. Appendix D2 is the source for the electricity use for BESS charging.

Impact Summary

As shown in **Table 3.9-3**, estimated annual Project-generated operational GHG emissions when combined with the amortized Project construction and decommissioning emissions would be approximately 1,856 MT CO_2e per year.

TABLE 3.9-3
ESTIMATED NET ANNUAL PROJECT GREENHOUSE GAS EMISSIONS

Emission Source	CO_2e (MT/year)
Amortized Construction and Decommissioning Emissions	218
Operational Emissions	1,638
Total Project Emissions	1,856
Amortized Avoided Emissions	9,224
Net Project Emissions	-7,368

NOTES: CO_2e = carbon dioxide equivalent; MT = metric ton

SOURCES: Based on Appendices D1 and D2.

By calculating the electricity produced by the Project and accounting for future CO_2e emission factors from PG&E, the Project would avoid a net total of 276,717 MT CO_2e from 2028 to 2044. Amortized over the 30-year life of the Project, the Project would result in a total of 7,368 MT CO_2e per year of avoided emissions. As shown in Table 3.9-3, the Project would avoid more GHG emissions over its lifetime than it would emit and net amortized Project emissions would be -7,368 MT CO_2e per year. Therefore, the Project would not generate GHG emissions that would have a significant impact on the environment. This impact would be less than significant.

Mitigation: None required.

Criterion b) Whether the Project would conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Impact 3.9-2: The Heartland Solar Project could conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. (*Less-than-Significant Impact*)

Under the SJVAPCD's CEQA guidance for GHGs, 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. The Heartland Solar Project involves the construction, operation and maintenance, and decommissioning of a solar facility that would produce a new renewable source of energy in Fresno County. As discussed below, the Project would be consistent with the CARB Scoping Plan and would not impede the GHG reductions from cars and light-duty vehicles required by FCOG's RTP/SCS.

The Heartland Solar Project aligns with CARB's 2022 Scoping Plan by supporting the building of clean energy infrastructure, facilitating electrification efforts, and enabling the rapid deployment of clean technologies. It would contribute to the development of renewable energy, the integration of renewable energy sources into the grid, and help ensure the reliability and resiliency of the electricity grid. By providing a means to store electricity generated from solar energy and dispatch that energy during high times of high demand, the Project would help reduce strain on the grid and optimize energy usage. This would promote the effective utilization of renewable energy resources and reduce the need for additional fossil fuel–based power generation. Ultimately, the Heartland Solar Project would play a crucial role in achieving California's goals of carbon neutrality, reducing reliance on fossil fuels, and improving grid reliability as outlined in the 2022 Scoping Plan.

In keeping with the renewable energy target under the Scoping Plan and as required by SB 350, the Project would provide a source of renewable energy to help the State achieve the RPS of 50 percent by 2030. Renewable energy, in turn, potentially offsets GHG emissions generated by fossil-fuel power plants.

As discussed above under Impact 3.9-1, renewable energy from the Project would replace existing fossil fuel–generated energy and help the State achieve the renewable energy targets established under the Scoping Plan and SB 100 by providing a source of renewable energy to

achieve the RPS of 60 percent by the end of 2030 and 100 percent by 2045. While the Project would generate short-term GHG emissions from construction and decommissioning, as well as from long-term operation and maintenance, it would result in a net reduction in GHG emissions from the production of solar-generated electricity. The Project would assist in the attainment of the State's goals by using renewable, solar-generation energy that could displace electricity generated by fossil fuel–fired power plants, and therefore would comply with the goals and objectives of the Scoping Plan.

The FCOG's RTP/SCS is an applicable plan adopted for the purpose of reducing GHGs from the land use and transportation sectors in Fresno County. It was adopted after completion of a Program EIR. CARB approved the most recent update to the RTP/SCS in 2022. The 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 SCS responds to SB 375's requirement for metropolitan planning organizations to link transportation funding decisions to land use to decrease GHG emissions from cars and light-duty trucks. The per capita GHG reduction targets from transportation emissions for FCOG are 13 percent from 2005 levels by 2035. The GHG emissions FCOG used to determine the measures in its RTP/SCS are based on the General Plans of local cities and counties, as well as demographic data trends and projections that include household, employment, and total population statistics. As discussed in Section 3.12, Land Use and Planning, the Project is consistent with Fresno County's General Plan. The Project would require up to approximately 10 full-time equivalent personnel to perform tasks such as equipment maintenance or replacement. The additional jobs estimated for the Project would be well within the County's growth projection assumed for land designated agricultural in the FCOG 2022 RTP/SCS (FCOG 2022). The 2022 RTP/SCS notes that its land use assumptions include the loss of 266 acres of farmland but notes the importance of conserving prime and unique farmland, and farmland of statewide importance. The Project would not convert such farmland, as explained in Section 3.3, Agriculture and Forestry Resources. Therefore, the Project would not conflict with the FCOG 2022 RTP/SCS.

Project consistency with the 2022 Regional Transportation Plan and Sustainable Communities Strategy would also support the SB 32 GHG reduction goal. The Project would not conflict with an applicable plan regulating GHG emissions and impacts would be less than significant.

Mitigation: None required.

3.9.3.3 Direct and Indirect Effects of the PG&E Components

Impact 3.9-3: The PG&E Components would cause GHG emissions. (*Less-than-Significant Impact*)

As described in Section 2.5.2 in Chapter 2, Project Description, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the off-site point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by

PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

The GHG emissions estimates for construction of the Project described in Impact 3.9-1, above, include the emissions that would be associated with the PG&E Components. Less than 15 percent of the Project's GHG emissions would be associated with the construction of the PG&E Components. During operations, the PG&E Components would generate virtually no GHG emissions. In addition, the PG&E Components would assist in providing a new source of renewable energy to support the State's energy goals and would not conflict with an applicable plan regulating GHG emissions. Therefore, the PG&E Components would result in less-than-significant impacts associated with GHG emissions.

Mitigation: None required.

3.9.4 Cumulative Effects Analysis

3.9.4.1 Cumulative Effects of the Heartland Solar Project

GHG emissions are inherently a cumulative concern. Accordingly, the significance of GHG emissions in this analysis is determined based on 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 Project's direct and/or indirect generation or offset of GHG emissions on the region and the state. The California Air Pollution Control Officers Association considers GHG impacts to be exclusively cumulative impacts, in that no single project could, by itself, result in a substantial change in climate (CAPCOA 2008). Therefore, the evaluation of cumulative GHG impacts presented above evaluated whether the Project would make a considerable contribution to cumulative climate change effects. The Project would result in a net reduction in GHG emissions over the duration of the use permit period and would not conflict with the state's GHG reduction goals. Therefore, the Project-specific incremental impact on GHG emissions would not be cumulatively considerable and the cumulative impact would be less than significant.

3.9.4.2 Cumulative Effects of the PG&E Components

The evaluation of cumulative GHG impacts presented in Section 3.9.3.3, above, evaluated whether the PG&E Components would make a considerable contribution to cumulative climate change effects. The PG&E Components would contribute to a net reduction in GHG emissions over the duration of the use permit period and would not conflict with the state's GHG reduction goals. Therefore, the PG&E Components-specific incremental impact on GHG emissions would not be cumulatively considerable and the cumulative impact would be less than significant.

Mitigation: None required.

3.9.5 References

CAPCOA (California Air Pollution Control Officers Association). 2008. CEQA & Climate Change—Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. January 2008.

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FCOG (Fresno Council of Governments). 2022. Regional Transportation Plan & Sustainable Communities Strategy. July 28, 2022.

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USEPA (U.S. Environmental Protection Agency). 2017. Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation, January 12, 2017.

3.10 Hazards and Hazardous Materials

This section identifies and evaluates issues related to hazards and hazardous materials including, but not limited to, the routine transport, use, or disposal of hazardous materials; potential upsets and accident conditions; releases in proximity to schools; and adopted emergency response plans and emergency evacuation plans for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. Issues and analysis concerning air quality are presented in Section 3.4, *Air Quality*. Issues and analysis concerning wildland fire are presented in Section 3.20, *Wildfire*. This analysis is based in part on the Phase I environmental site assessment prepared for the Project (Appendix H) by Environmental Science Associates (ESA 2022).

Fresno County (County) received scoping input from California Geologic Energy Management Division (CalGEM) (Appendix A, *Scoping Report*). The letter noted State-level requirements for well abandonment responsibilities pursuant to Public Resources Code Section 3208.1. CalGEM also provided a well evaluation and indicated that there are no known oil or gas wells within the Project boundary.

3.10.1 Setting

3.10.1.1 Study Area

The study area for the analysis of potential impacts to hazards and hazardous materials is defined as the footprint of the Project, including all areas of temporary and/or permanent ground disturbance, as well as the haul routes to be used to transport any hazardous materials or wastes associated with the Project. In addition, the study area extends to 0.25 mile to evaluate for schools and two miles to evaluate for airports.

3.10.1.2 Environmental Setting

The Project site is located in a rural, agricultural region 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 residences. Agricultural land use can also involve the storage and handling of hazardous materials and wastes including for the application of pesticides and herbicides, and the storage and use of fuels. Gasoline stations and other facilities that utilize or store fuels, solvents, chemicals or other hazardous materials represent other potential sources of hazardous materials in rural areas. The presence of sources of hazardous materials, if encountered, can cause exposures that may result in adverse environmental and health effects depending on the extent of exposure.

Definition of Hazardous Materials

A *hazardous material* is 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[n]). The term *hazardous materials* refers to 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).

Past industrial or commercial activities occasionally result in spills or leaks of hazardous materials or wastes to the subsurface, resulting in soil and/or groundwater contamination. Depending on the type and concentrations of contamination, potential exposure can threaten public health if released from the soil, groundwater, or into the air. The four primary exposure pathways through which an individual can be exposed to a hazardous material or waste are inhalation, ingestion, bodily contact, and injection. Exposure can result from 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 excavating, stockpiling, handling, or transport of such soils.

Hazardous Materials Sites

In California, regulatory databases listing hazardous materials sites provided by numerous federal, State, and local agencies are consolidated 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. Instead, the databases are maintained on an individual basis by the following agencies:

- List of Hazardous Waste and Substances sites from the California Department of Toxic Substances Control (DTSC) EnviroStor database.
- List of Leaking Underground Storage Tank Sites by County and Fiscal Year from the State Water Resources Control Board (SWRCB) GeoTracker database.
- List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit.
- List of "active" Cease and Desist Order and Cleanup and Abatement Orders from the SWRCB.
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC and listed on its EnviroStor database.

The five databases cited 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 (LUSTs), permitted underground storage tanks (USTs), Department of Defense sites, and 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 to be 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 and the case is closed by the overseeing agency. The databases are cross-connected and can be viewed through either the GeoTracker or the EnviroStor website.

A review of the websites indicated no active and two closed sites listed within the Project site (SWRCB and DTSC 2023). The first of the closed sites, the Westlands Water District (WWD) LUST site, is identified as being located at the intersection of State Route (SR) 33 and W. Adams Avenue; however, the closed LUST site is located east of (and beyond the zone of influence of) the Project site. The second closed site, referred to in the listing as the Britz Fertilizers property site, is located within the Project site, along the west side of SR 33. In each case, the closed status indicates that the overseeing regulatory agency concluded that the site has been cleaned up such that the site no longer poses a risk to people or the environment.

Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment was prepared for the Project site (Appendix H). The purpose of the investigation was to identify any known or suspected areas of hazardous materials or wastes that may be present beneath, on or within proximity to the Project site. A commercial government records database service searched relevant federal, State, and local regulatory agency lists for listings of the Project site assessed in this report, and for nearby properties within the appropriate ASTM 2247 standard search distances. In addition, regulatory agency websites were checked to provide additional information. The records search returned nine listings. All but one of the listings at or near the subject properties are not considered able to affect the Project site. The search of government regulatory records and other records identified the previously discussed closed WWD LUST site and the closed Britz Fertilizers property site. As noted above, the WWD LUST site is located east and beyond the zone of influence of the Project site. The Britz Fertilizers property, located within the Project boundary, is considered a *historical recognized environmental condition* because the spill at this location has been cleaned up to the satisfaction of the overseeing regulatory agency.

The Project site was inspected on April 29 and September 30, 2022. No *recognized environmental conditions* were observed relative to hazardous materials, hazardous waste, or chemical use, storage, or disposal.

The Project site consists of fallow or recently plowed farmland; no active farming was observed. None of the existing irrigation infrastructure is in active use. Prior to WWD's acquisition of the subject property in 2003, it was farmed primarily for cotton. Three areas, referred to as Dump Areas 1, 2, and 3 (see Appendix H for location map), have been used for the illegal dumping of a light truck, a drum of used motor oil, refrigerators, microwaves, toilets, mattresses, tires, empty buckets and bottles, broken-up furniture and lumber, children's toys, rugs, household trash, empty boxes, dead sheep, and miscellaneous debris and trash. The discarded debris and trash are considered a *de minimis*[1] condition because no hazardous materials containers were observed, and the discarded materials could be properly disposed of at any non-hazardous waste landfill. The one drum of motor oil observed at the site could be recycled at any oil recycler. There were

[1] A *de minimis* condition is a condition related to a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

no observations of underground or aboveground storage tanks, waste ponds, unusual odors, or stressed vegetation. Occasional small areas of stained soil were observed but each is considered a *de minimis* condition because the staining was neither extensive nor deep. Minor oil staining was observed on wood supports for an inactive drain sump pump but is considered a *de minimis* condition because no oil staining was observed on the adjacent soil and the adjacent vegetation was not stressed.

Proximity to Schools

There are no schools within 0.25 mile of the Project site. The closest schools are Cantua Elementary School located approximately 7 miles southeast, and Tranquillity Elementary School and Tranquillity High School, both located approximately 8 miles east of the Project site.

Proximity to Airports

There are no airports within 2 miles of the Project site. The closed William Robert Johnston Municipal Airport is located in the eastern portion of the City of Mendota about 6.4 miles north of the Project site. The Stamoules Airport (#22 on cumulative project list in Section 3.1.3) is about 6.5 miles northwest of Project site. The San Joaquin Airport is located about 9.5 miles east of the Project site.

Naturally Occurring Selenium in Soil

Selenium is a trace element that is a naturally occurring solid substance widely and unevenly distributed in the earth's crust (ATSDR 2003). In some parts of the United States, especially in the western states, some soils are found to naturally have higher levels of selenium compounds. Some plants can build up selenium to levels that harm livestock feeding on them, thus causing people to consume too much selenium if they eat a lot of locally grown grains and vegetables or animal products that have built up high levels of selenium.

Selenium remains an essential nutrient for humans and animals, which are exposed to low levels of selenium daily through food, water, and air (ATSDR 2003; NIH 2020). The recommended dietary allowance for selenium for adults is 55 micrograms (mcg) per day with recommendations for lower concentrations for infants and children (NIH 2020). The general public rarely breathes high levels of selenium although workers in industrial facilities may inhale selenium dust in workplace air. The most common intake of selenium is through the ingestion of food products with a high buildup of selenium levels. High levels of exposure to selenium in water and food supplies can cause clinical signs of toxicity, including loss of hair or fingernails, numbness in fingers or toes, or circulation problems. According to the Agency for Toxic Substances and Disease Registry (ATSDR), "No human populations in the United States have been reported with long-term selenium poisoning, including populations in the western part of the country where selenium levels are naturally high in the soil" (ATSDR 2003). Selenium concentrations for soils at neighboring parcels average 1 milligram per kilogram (mg/kg), which is considered "moderately elevated" relative to the common range (0.1 to 1.4 mg/kg) for western U.S. and San Joaquin Valley soils (U.S. Bureau of Reclamation 2005).

3.10.1.3 Regulatory Setting

Federal

The primary federal agencies with responsibility for hazards and hazardous materials management include the U.S. Environmental Protection Agency (USEPA), U.S. Department of Labor Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (USDOT). Federal laws, regulations, and responsible agencies are summarized in **Table 3.10-1**.

TABLE 3.10-1
FEDERAL LAWS AND REGULATIONS RELATED TO HAZARDOUS MATERIALS MANAGEMENT

Classification	Federal Law or Responsible Federal Agency	Description
Hazardous Waste Handling	Resource Conservation and Recovery Act of 1976 (RCRA)	Under RCRA, the U.S. Environmental Protection Agency (USEPA) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste from "cradle to grave."
	Hazardous and Solid Waste Act	Amended RCRA in 1984, affirming and extending the "cradle to grave" system of regulating hazardous wastes. The amendments specifically prohibit the use of certain techniques for the disposal of some hazardous wastes.
	Toxic Substances Control Act (TSCA)	Code of Federal Regulations Title 40 Chapter 1, Subchapter R – Toxic Substances Control Act – Part 761 Polychlorinated Biphenyls (PCBs) – covers the identification and sampling requirements for PCBs for disposal purposes.
Hazardous Materials Management	Community Right-to-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA)	Imposes requirements to ensure that hazardous materials are properly handled, used, stored, and disposed of and to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.
Hazardous Materials Transportation	U.S. Department of Transportation (USDOT)	USDOT has the regulatory responsibility for the safe transportation of hazardous materials. The USDOT regulations govern all means of transportation except packages shipped by mail.
	U.S. Postal Service (USPS)	USPS regulations govern the transportation of hazardous materials shipped by mail.
Occupational Safety	Occupational Safety and Health Act of 1970	The U.S. Department of Labor Occupational Safety and Health Administration sets standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries.
Structural and Building Components (Hazardous Building Materials [ACM, LBP, and PCBs])	Toxic Substances Control Act	Regulates the use and management of hazardous building materials and sets forth detailed safeguards to be followed during the disposal of such items.
	USEPA	The USEPA monitors and regulates hazardous materials used in structural and building components and their effects on human health.

North American Electric Reliability Corporation Standards

The North American Electric Reliability Corporation (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, NERC develops and

enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC 2025). 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, which became effective on April 7, 2006, establishes requirements of the formal transmission vegetation management program, which include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, while taking into consideration 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 IEEE Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) (IEEE 2021), which establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

State

The primary State agencies with responsibility for hazardous materials management in the region include the DTSC and the RWQCB within the California Environmental Protection Agency, California Occupational Safety and Health Administration, California Department of Public Health, California Highway Patrol, and California Department of Transportation. State laws, regulations, and responsible agencies are summarized in **Table 3.10-2**.

Additional State Regulations

The California Code of Regulations (Cal. Code Regs.) contains additional requirements that would apply to the Project, including:

- 8 Cal. Code Regs. Section 2700 et seq., High Voltage Electrical Safety Orders, which establish essential requirements and minimum standards for installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger.
- 14 Cal. Code Regs. Sections 1250–1258, Fire Prevention Standards for Electric Utilities, which provide specific exemptions from electric pole and tower firebreak and electric conductor clearance standards and specify when and where standards apply. These regulations establish minimum clearance requirements for flammable vegetation and materials surrounding structures.
- 22 Cal. Code Regs. Section 66273, Standards for Universal Waste Management, which regulate the management of universal wastes. These wastes are not fully regulated 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.

TABLE 3.10-2
STATE LAWS AND REGULATIONS RELATED TO HAZARDOUS MATERIALS MANAGEMENT

Classification	Law or Responsible State Agency	Description
Hazardous Materials Management	Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program); CUPA (Health and Safety Code Sections 25404 et seq.)	The California Environmental Protection Agency adopted regulations in January 1996 that implemented the Unified Program at the local level. The agency responsible for implementation of the Unified Program is called the Certified Unified Program Agency (CUPA), which for Fresno County is the HazMat Compliance Program (FCMCP).
	California Fire Code, Title 24, Chapter 9, California Code of Regulations and California Building Code, Part 2	The California Fire Code regulates the storage and handling of hazardous materials, including the requirement for secondary containment, separation of incompatible materials, and preparation of spill response procedures.
Hazardous Waste Handling	California Hazardous Materials Release Response Plan and Inventory Law of 1985; CUPA	The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act) requires that businesses that store hazardous materials on-site prepare a Hazardous Materials Business Plan (HMBP) and submit it to the local CUPA, which in this case is the FCMCP.
	California Hazardous Waste Control Act; California Health and Safety Code, Division 20, Chapter 6.5, Article 2, Section 25100, et seq.; California Department of Toxic Substances Control (DTSC)	Under the California Hazardous Waste Control Act, DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste in California. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. DTSC is also the administering agency for the California Hazardous Substance Account Act. California Health and Safety Code, Division 20, Chapter 6.8, Sections 25300 et seq., also known as the State Superfund law, providing for the investigation and remediation of hazardous substances pursuant to State law.
Hazardous Materials Transportation	Titles 13, 22, and 26 of the California Code of Regulations	Regulates the transportation of hazardous waste originating in and passing through the state, including requirements for shipping, containers, and labeling.
	California Highway Patrol and California Department of Transportation, California Vehicle Code, Chapter 5, Sections 31303–31309	These two State agencies are primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies.
Occupational Safety	California Occupational Safety and Health Administration (Cal/OSHA) regulations (Title 8 California Code of Regulations)	Cal/OSHA has primary responsibility for developing and enforcing workplace safety regulations in California. Because California has a federally approved occupational health and safety program, it is required to adopt regulations that are at least as stringent as those found in Title 29 of the Code of Federal Regulations (CFR). Cal/OSHA standards are generally more stringent than federal regulations. Requires employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.
Construction Storm Water General Permit (Construction General Permit; Order 2022-0057-DWQ, NPDES No. CAS000002)	Regional Water Quality Control Board (RWQCB)	Dischargers whose project disturbs 1 acre or more of soil or where projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 acre or more, are required to obtain coverage under the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit; Order 2022-00547-DWQ). Construction activity subject to this permit includes clearing, grading, grubbing, and other disturbances to the ground such as excavation and stockpiling, but does not include regular maintenance activities performed to restore the original line, grade,

Classification	Law or Responsible State Agency	Description
		or capacity of a facility. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific best management practices (BMPs) designed to prevent sediment and pollutants from contacting stormwater from moving off-site into receiving waters. The BMPs fall into several categories, including erosion control, sediment control, waste management and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area.
Underground Infrastructure	California Code of Regulations Section 4216-4216.9	Sections 4216-4216.9, "Protection of Underground Infrastructure," require an excavator to contact a regional notification center (e.g., Underground Services Alert or DigAlert) at least two days prior to excavation of any subsurface installations. Any utility provider seeking to begin a project that could damage underground infrastructure can call Underground Service Alert, the regional notification center for Southern California. Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are then notified and are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area.

Emergency Response

The California Governor's Office of Emergency Services developed the State of California Emergency Plan (Cal OES 2017) to coordinate federal, State, local, and private agency emergency service providers' response to natural or human-caused emergencies. Responding to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services, which coordinates the responses of other agencies.

Local

Fresno County

Fresno County General Plan

Planning for growth and development requires the consideration of hazards and a wide range of public safety issues. Some safety hazards, such as seismic and geologic hazards, flooding, and wildland fire hazards are naturally induced. Some hazards are the result of natural events that are exacerbated by human activity and alteration of the natural environment, such as dam failure and development in sensitive areas such as floodplains or areas subject to erosion and landslides. Finally, some hazards are human-made, including airport crash hazards, release of hazardous materials, and crime. In addition to addressing safety issues related to hazardous conditions, the planning process should account for other issues related to community health and safety, such as noise exposure (Fresno County 2024).

> **Goal PF-H:** To ensure the prompt and efficient provision of fire and emergency medical facility and service needs, to protect residents of and visitors to Fresno County from injury and loss of life, and to protect property from fire.
>
> > ***Policy PF-H.5: Minimize Fire Hazard Risk.*** 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: California Fire Code. The County shall ensure that all proposed developments are reviewed for compliance with fire safety standards by responsible local fire agencies per the California Fire Code and other State and local ordinances.

Policy OS-G.11: Sensitive Receptors. The County shall continue, through its land use planning processes, to avoid inappropriate location of residential uses and sensitive receptors in relation to uses that include, but are not limited to, industrial and manufacturing uses and any other uses which have the potential for creating a hazardous or nuisance effect.

Goal HS-A: To protect public health and safety by preparing for, responding to, and recovering from the effects of natural or technological disasters

Policy HS-A.7: Building Design. The County shall review the design of all buildings and structures in the Very High Fire Hazard Severity Zones and State Responsibility Areas to ensure they are designed and constructed to State and local regulations and standards as part of the building permit plan check process.

Policy HS-A.8: Transportation Corridors and Evacuation Routes. The County shall continue to improve community transportation corridors to allow for effective evacuation routes for the public and effective access for emergency responders, including in areas that lack more than two emergency access routes.

Policy HS-A.12: Access/Evacuation Routes. Establish minimum standards for evacuation, including in the Very High Fire Hazard Severity areas, in the Emergency Operations Plan and continuously reassess access and evacuation route capacity and put mitigation measures and improvement plans in place if needed

Goal HS-B: To minimize the risk of loss of life, injury, and damage to property and natural resources resulting from fire hazards.

Policy HS-B.1 Fire Hazards Review*:* 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.2: Minimize Fire Hazard Risk Design. The County shall ensure that development in high fire hazard areas is designed and constructed in a manner that minimizes the risk from fire hazards by increasing resistance of structures to heat, flames, and embers. The County shall review current building code standards and other applicable statutes, regulations, requirements, and guidelines regarding construction, and specifically the use and maintenance of non-flammable materials (both residential and commercial) and consider adopting amendments to Title 15 of the County Ordinance Code (Building and Construction) to implement appropriate standards. Special consideration shall be given to the use of fire-resistant construction in the underside of eaves, balconies, unenclosed roofs and floors, and other similar horizontal surfaces in areas of steep slopes.

Policy HS-B.4: Fire Risk Management. The County shall require that new discretionary development including residential subdivisions and large commercial proposals in high-fire-hazard areas have fire-resistant vegetation, cleared fire breaks separating communities or clusters of structures from native vegetation, or a long-term comprehensive vegetation and fuel management program. Fire hazard reduction measures shall be incorporated into the design of development projects in fire hazard areas.

Policy HS-B.5: Landscape Features. In consultation with the local fire agency and CalFire, the County shall require structures to be sited to maximize low-flammability

landscape features to buffer against wildfire spread. Consultation with the local fire agency will be necessary to make this determination.

Goal HS-E: To minimize the exposure of the public to high noise levels and safety hazards through land use controls and policies for property in the vicinity of airports; and to limit urban encroachment around airports in order to preserve the safety of flight operations and the continued viability of airport facilities.

Policy HS-E.1: Airport Land Use Policy Plans. The County shall limit land uses in airport safety zones to those uses listed in the applicable CLUPPs [comprehensive land use policy plans] as compatible uses. Exceptions shall be made only as provided for in the CLUPPs. Such uses shall also be regulated to ensure compatibility in terms of location, height, and noise.

Policy HS-E.2: Airport Safety Hazards. The County shall ensure that new development, including public infrastructure projects, does not create safety hazards such as glare from direct or reflective sources, smoke, electrical interference, hazardous chemicals, or fuel storage in violation of adopted safety standards.

Policy HS-E.3: Federal Airport Safety Zones. The County shall ensure that development, including public infrastructure projects, within the airport approach and departure zones complies with Part 77 of the Federal Aviation Administration Regulations (Objects Affecting Navigable Airspace).

Goal HS-F: To minimize the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.

Policy HS-F.1: Hazardous Materials Facilities. 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.2: Hazardous Waste Applications. The County shall require that applications for discretionary development projects that will use hazardous materials or generate hazardous waste in large quantities include detailed information concerning hazardous waste reduction, recycling, and storage.

Policy HS-F.4: Soil and Groundwater Contamination Reports. For redevelopment or infill projects or where past site uses suggest environmental impairment, the County shall require that an investigation be performed to identify the potential for soil or groundwater contamination. In the event soil or groundwater contamination is identified or could be encountered during site development, the County shall require a plan that identifies potential risks and actions to mitigate those risks prior to, during, and after construction.

Policy HS-F.5: Demolition Standards. The County shall require that demolition of structures where friable asbestos or other hazardous materials could be released into the environment comply with applicable regulations and standards.

Goal OS-G: To improve air quality and minimize the adverse effects of air pollution in Fresno County.

Policy OS-G.11: Sensitive Receptors. The County shall continue, through its land use planning processes, to avoid inappropriate location of residential uses and sensitive receptors in relation to uses that include but are not limited to industrial and

manufacturing uses and any other use which have the potential for creating a hazardous or nuisance effect.

Policy OS-G.12: Architectural Coating Reactive Organic Gases Content Limits. The County shall require future development projects under the GPR/ZOU, to the maximum extent feasible, to use architectural coating materials, as defined in the San Joaquin Valley Air Pollution Control District's (SJVAPCD) Rule 4601, that are zero-emission or have a low reactive organic gas (ROG) content (below 10 grams per liter). Where such ROG coatings are not available, or feasible, the coating with the lowest ROG rating available shall be used. These measures shall be noted on all construction plans, and the County shall perform periodic site inspections during construction to verify compliance.

Fresno County Operational Area Master Emergency Services Plan

In 1995, the Fresno County Board of Supervisors adopted California's Standardized Emergency Management System, established the geographic area of the County of Fresno as the Fresno County Operational Area, and designated Fresno County as the Operational Area Lead Agency (Fresno County 2025). Fresno County Office of Emergency Services coordinates the development and maintenance of the Fresno County Hazard Mitigation Plan (Fresno County 2018b). This plan serves as a guide for the County's response to emergencies/disasters in the unincorporated areas. Emergency facilities in the County are identified in this plan. The Emergency Operations Center is located in downtown Fresno, approximately 35 miles east of the Project site. Public junior high and high schools throughout the county are identified as the primary resource for public shelters during disasters. For large, evacuated populations in locations where junior high and high schools are not available, public elementary schools, County fairgrounds, community centers, auditoriums, armories, churches, and some commercial and industrial buildings are also possible shelter sites. Emergency and fire services are handled by the County. See Section 3.16, *Public Services*, for details about emergency response services in the Project area.

County of Fresno Solar Facility Guidelines

The County of Fresno has established Solar Facility Guidelines for applicants desiring to construct and operate within the Country (Fresno County 2017). The guidelines consist of requirements for applicants to address as part of the application review process. The required information includes a description of a proposed project, agricultural history of the site, water supply source, site legal status (e.g., Williamson Act contracts, easements, and liens), buffers with adjacent land uses, pest management plans, and reclamation plans for decommissioning the facility. Project consistency with the County's Solar Facility Guidelines is evaluated in Appendix I2.

Battery Energy Storage System Codes and Standards

Energy storage facilities can create hazards for firefighters and emergency responders. Utility-scale energy storage systems must comply with California Fire Code (described above), National Fire Protection Association, OSHA, Underwriters Laboratories (UL), and Fresno County Fire Protection District codes and standards. These include but are not limited to the following:

National Fire Protection Association:

- 1—Fire Code
- 68—Standard on Explosion Protection by Deflagration Venting

- 69—Standard on Explosion Prevention System
- 70—National Electrical Code
- 855—Standard for the Installation of Energy Storage System
- 111—Stored Electrical Energy Emergency and Standby Power System
- 855—Standard for the Installation of Stationary Energy Storage Systems)
- 1072—Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications
- 1710—Standard for Organization and Deployment of Fire Suppression Operations, Emergency Medial Operations, and Special Operations to the Public by Career Fire Departments

OSHA:

- 29 CFR 1910.134(g)(4)—Respiratory Protection
- 29 CFR 1910.1000—Limits for Air Contaminants. Regulation, Occupational Safety and Health Administration

Underwriters Laboratories:

- UL 1642—Standard for Lithium Batteries
- UL 1741—Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources
- UL 1973—Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications
- UL 9540—Standard for Energy Storage Systems and Equipment
- UL 9540A—Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage System.

3.10.2 Significance Criteria

The Project would result in a significant impact related to hazards and hazardous materials 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 one-quarter mile of an existing or proposed school;

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;

e) For a project located within 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, result in a safety hazard or excessive noise for people residing or working in the project area; or

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The environmental checklist included in CEQA Guidelines Appendix G further suggests that a project would result in significant impacts to hazards and hazardous materials if it would expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. Potential impacts relating to Wildfire are addressed in Section 3.20.

3.10.3 Direct and Indirect Effects

3.10.3.1 Methodology

This environmental analysis of the potential impacts related to hazards and hazardous materials from the construction, operation, maintenance, and decommissioning of the Project is based on a review of the results of the site-specific investigations including the Phase I site assessment, a review of literature and database research, the Fresno County General Plan; information regarding proposed construction details, potential uses and associated operations at the Project site are based on information provided in Chapter 2, *Project Description*.

3.10.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion 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.

Criterion b) Whether the Project would create a significant hazard to the public or the environment or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Impact 3.10-1: The Heartland Solar Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites. (*Less than Significant with Mitigation Incorporated*)

Construction

Dump Sites

Three small illegal dump sites exist within the Project site that would need to be cleaned up prior to Project construction. The Phase I environmental site assessment provided in Appendix H provides a location map of the dump sites and a detailed description of the discarded materials. The discarded materials include a GMC Scottsdale truck-based station wagon, household appliances, broken toilets, mattresses, empty buckets and bottles, broken-up furniture and lumber, children's toys, rugs, household trash, empty boxes, and other miscellaneous debris. The discarded materials and waste are considered a *de minimis* condition because the materials could be properly disposed

of at any nonhazardous waste landfill. Some small areas of stained soil were observed but are not extensive or deep and are considered also a *de minimis* condition. A half-full plastic drum with what appears to be used motor oil is also present and has bullet holes that have punctured the drum in numerous places, some of which have leaked oil to the ground. This condition is considered a *de minimis* condition because the used motor oil could be recycled at any oil recycling facility and the soil with oil could be disposed of as nonhazardous waste. Nonetheless, the presence of this debris and waste, along with stained soil, would need to be properly disposed of prior to Project construction. While the observed discarded materials did not appear to contain hazardous materials, there is potential of exposure to hazardous materials, particularly at Dump Site #2, which contains extensive debris, some of which is buried under other debris concealing its nature. Impacts on workers during this cleanup could be **potentially significant**. This condition would be mitigated with the implementation of **Mitigation Measure 3.10-1: Site Management Plan**.

Mitigation Measure 3.10-1: Site Management Plan

The contractor conducting the cleanup of the illegal dump sites shall develop and implement a site management plan (SMP) for the management of waste, hazardous materials, and affected soil before any ground-disturbing activity. The SMP shall describe measures for (i) removal of waste, hazardous materials, and contaminated soil (ii) characterization of the soil underlying the waste and hazardous materials to verify all contaminated materials have been removed per regulatory standards, and (iii) off-site disposal of waste, hazardous materials, and soil in compliance with all applicable regulations. The SMP shall include the following, at a minimum:

- Site description, including the waste and hazardous materials that may be encountered.
- Roles and responsibilities of on-site workers, supervisors, and the regulatory agency.
- Training for site workers focused on the recognition of and response to encountering waste and hazardous materials.
- Notification requirements in the event of discovery of unknown contamination.
- Protocols for the materials (waste, hazardous materials, and soil) testing, handling, removing, transporting, and disposing of removed materials in a safe, appropriate, and lawful manner.
- Reporting requirement to the overseeing regulatory agency, if any contamination is found that requires agency oversight, documenting that site activities were conducted in accordance with the SMP.

The SMP shall be submitted to the lead agency for review before the start of cleanup activities and as a condition of the grading and/or construction permit(s). The contract specifications shall mandate full compliance with all applicable federal, State, and local regulations related to the identification, transportation, and disposal of hazardous materials.

Significance after Mitigation: Less than significant. Implementation of Mitigation Measure 3.10-1 would reduce any potentially significant impacts related to pre-construction cleanup to less than significant given that any hazards present on-site prior to construction would be managed through an SMP, which would include proper site cleanup protocol, including the disposal of hazardous materials.

Impact 3.10-2: The Heartland Solar Project would not otherwise create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (*Less than Significant Impact*)

Construction of Project

Construction would include installing fencing, designating staging areas, conducting debris and vegetation removal, site preparation, trenching, grading, and excavation. Construction would last between 16 to 18 months.

During the construction phase, construction equipment and materials would include fuels, oils and lubricants, solvents and cleaners, cements and adhesives, paints and thinners, degreasers, cement and concrete, and asphalt mixtures, which are all commonly used in construction. The routine use or an accidental spill of hazardous materials could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment. However, the majority of the waste generated during construction would be non-hazardous, and would consist primarily of cardboard, wood pallets, wire, scrap metal, common trash, and wood wire spools. Most construction waste would be disposed of at a non-hazardous landfill or at a recycling facility whenever feasible.

Construction activities would be required to comply with the numerous hazardous materials regulations described in in Section 3.10.1.3, *Regulatory Setting,* designed to ensure that hazardous materials would be transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement Hazardous Material Business Plans (HMBPs) that would require that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release. The California Fire Code would also require measures for the safe storage and handling of hazardous materials.

As discussed in Section 3.8.1.3*, Regulatory Setting*, in Section 3.8, *Geology, Soils, and Paleontological Resources*, the construction contractor would be required to prepare a SWPPP for construction activities that would list the hazardous materials proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; protocols for responding immediately to spills; and describe best management practices for controlling site runoff. In addition, the transportation of hazardous materials would be regulated by the U.S. Department of Transportation, California Department of Transportation, and California Highway Patrol. Together, federal and State agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release.

Any documented or undocumented subsurface utilities or structures that might be encountered and damaged could result in a release of a hazardous material. For example, the northern portion of the Project site has an east-west underground natural gas pipeline. Additionally, undocumented subsurface utilities could be encountered during construction of the transmission lines from the

Project substation to the existing PG&E-owned Tranquillity Switching Station. The potential for such incidents would be reduced by thoroughly screening for subsurface structures in areas prior to commencement of any subsurface work, as required under Government Code Section 4216.

Finally, in the event of an accidental spill that could release hazardous materials, a coordinated response would occur at the federal, state, and local levels, including the Fresno County Fire Protection District Hazardous Materials Team, to respond to and assess the situation, as needed.

Requisite compliance with the numerous laws and regulations that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the routine use or accidental release of hazardous materials. Therefore, with compliance with these regulatory requirements, the impact would be **less than significant**.

Selenium in Soil

Selenium is likely present in on-site soils, which, when disturbed through construction, could create exposure risks via the inhalation of dust. Although selenium is a naturally occurring substance and an essential nutrient for humans and animals, high levels of exposure to selenium through inhalation or ingestion can cause clinical signs of toxicity or circulation problems (ATSDR 2003). Selenium concentrations for soils at neighboring parcels average 1 milligram per kilogram (mg/kg), which is considered "moderately elevated" relative to the common range (0.1 to 1.4 mg/kg) for Western U.S. and San Joaquin Valley soils. Heartland Solar Project construction, however, would comply with all applicable San Joaquin Valley Air Pollution Control District rules and regulations, including Regulation VIII (Fugitive Dust Rules), which would minimize dust levels and further reduce impacts from fugitive dust that may contain selenium to a less-than-significant level. The most common intake of selenium is through the ingestion of food products with a high buildup of selenium levels. According to the ATSDR, "No human populations in the United States have been reported with long-term selenium poisoning, including populations in the western part of the country where selenium levels are naturally high in the soil" (ATSDR 2003). Furthermore, selenium is not classified as a human carcinogen (ATSDR 2003). Therefore, no health or carcinogenic effects would be anticipated with respect to selenium content in on-site soils and the impact would be less than significant.

Operations and Maintenance

Routine operation and maintenance activities at the solar facility site may involve the transportation, use, or temporary storage of hazardous materials during the ordinary course of work. Such materials may include batteries, hydraulic fluid, diesel fuel, insulation oil for the transformers, grease, lubricants, paint, solvents, and adhesives. Smaller quantities (e.g., consumer-size containers) of common, commercially available maintenance chemicals also would be used, including solvents, degreasers, lubricants, paints, and other coatings. All hazardous materials used on-site would be stored, handled, and disposed of in accordance with the manufacturers' specifications and consistent with all applicable regulatory requirements through a HMBP. Workers would be trained to engage in safe work practices and to properly identify and handle any hazardous materials on-site and to prevent accidental release.

Operation and maintenance of the Project would generate little hazardous waste. Upsets or accidents would be controlled via the secondary containment provided in accordance with applicable federal, state, and local laws and regulations. The insulating oil contained in each transformer does not normally require replacement, minimizing the potential for upsets or accidents involving its use. Further, Health and Safety Code Section 25500 et seq. requires the preparation of hazardous materials release response plans such as a HMBP under specified circumstances. Adherence to the HMBP would ensure that all handling, storage, and disposal of hazardous materials would be conducted in accordance with proven practices to minimize exposure to workers or the public.

Operation and maintenance vehicles would include light-duty trucks (e.g., pickup, flatbed) and other light equipment for maintenance and module washing. Heavy equipment is not expected to be utilized during normal operation. Large or heavy equipment may be brought to the facility infrequently for equipment repair or replacement or vegetation control. Long-term maintenance and equipment replacement would be scheduled in accordance with manufacturer recommendations to ensure equipment integrity is maintained. Moving parts, such as motors and tracking module drive equipment, motorized circuit breakers and disconnects, and inverter equipment would be serviced on a regular basis, and unscheduled maintenance would be conducted as necessary.

PV Solar Panels and Cadmium Telluride

The exact type of photovoltaic (PV) solar panels that would be installed have yet to be determined, however, it is anticipated that the proposed PV solar panels would be made from a polycrystalline silicon or thin-film technology. Polycrystalline silicon PV panels may include cadmium telluride (CdTe) technology. Elemental cadmium (Cd), which forms CdTe when reacted with tellurium (Te), is a lung carcinogen, and long-term exposure can cause detrimental effects on kidney and bone (Fthenakis 2003a). However, CdTe is in the environmentally stable form of a compound rather than the leachable form of a metal. OSHA treats CdTe similarly to Cd and thus all facilities working with CdTe should use the same precautions that apply to Cd. Because such materials are in a solid and non-leachable state, broken polycrystalline silicon PV panels would not be a source of pollution to surface water, stormwater, or groundwater.

The CdTe compound is encapsulated in the PV module with the PV module containing a very small amount of Cd. The amount of Cd within a CdTe module is proportional to the area of the module and thickness of the layers. Most CdTe layers are 1 to 3 microns thick, which could contain anywhere from 3 to 9 grams per square meter of Cd. For comparison, a 1-kilowatt CdTe PV system contains as little cadmium as seven C-sized nickel cadmium batteries. In addition, as technology advances, it is anticipated layer thickness would decrease therefore decreasing the amount of Cd in the modules.

It has been demonstrated that standard operation of CdTe PV systems does not result in cadmium emissions to air, water, or soil (Fthenakis 2003b). During the PV module manufacturing process, CdTe is bound under high temperature to a sheet of glass by vapor transport deposition, coated with an industrial laminate material, insulated with solar edge tape, and covered with a second sheet of glass. The module design results in the encapsulation of the semiconductor material between two sheets of glass, thereby preventing the exposure of CdTe to the environment (Fthenakis 2003a).

Several peer-reviewed studies have evaluated the environmental, health, and safety aspects of CdTe PV modules (Fthenakis et. al. 2003b). These studies have consistently concluded that during normal operations and foreseeable accidents (e.g., fires, breakage), CdTe PV modules do not present an environmental risk. No emissions from CdTe PV would be released during fires because Cd would dissolve into the molten glass. CdTe is a highly stable semiconductor compound due to strong chemical bonding that translates to extremely low solubility in water, low vapor pressure, and a melting point greater than 1,800˚F. Potential impacts on soil, air, and groundwater quality from broken CdTe PV modules are highly unlikely to pose a potential health risk because they are below human health screening levels (Sinha et al. 2012; Fthenkis et al. 2005). Potential CdTe emissions from broken PV modules exposed to precipitation also are unlikely. Based on warranty return data, the breakage rate of CdTe PV modules is 1 percent over 25 years, which translates to an average of 0.04 percent per year. This breakage rate is an overestimate because over one-third of PV module breakage occurs during shipping and installation. Modules that break during shipping and installation are removed from the construction site and returned to a manufacturing facility for recycling. Because CdTe has a low solubility in water, the likelihood of it being released to the environment is low.

Disposal risks of end-of-life CdTe PV modules are minimized because of the low solubility of CdTe and because the modules can be effectively recycled. CdTe PV modules have proven to pass the federal toxicity characteristic leaching procedure criteria for non-hazardous waste, allowing the modules to be disposed of in landfills (Fthenakis 2003b).

Under a recent fate and transport analysis, a worst-case scenario of the total release of Cd from PV panels and residential screening levels were used to evaluate the potential health impacts on on-site workers and off-site residents (Sinha et al. 2012). Results indicate that the exposure point concentrations in residential soil, air, and drinking water are one to six orders of magnitude below human health screening levels and below background levels, indicating that it is highly unlikely that Cd exposures would pose potential health risks to on-site workers or off-site residents.

Energy Storage System

Hazardous materials that would be present in an energy storage system, if developed, would be contained as required by applicable federal, State, and local requirements and would include necessary safety features such as appropriate ventilation, acid resistant materials, and presence of spill protection supplies. The energy storage system would be designed, constructed, and operated in accordance with applicable industry best practices and regulatory requirements, including but not limited to National Fire Protection Association 855 (Standard for the Installation of Stationary Energy Storage Systems), Section 1207 of the California Fire Code, and certified to UL 9540.

In the unlikely event of a fire or thermal runaway event, the facility is designed to manage and prevent propagation. In the event of a lithium-ion battery enclosure fire, the fire and smoke produced are similar to a car fire and do not pose a greater risk than other structures. For example, following a recent battery fire in Escondido, California, San Diego County Hazmat conducted air monitoring over a four-hour period during the incident and found that “only normal products [of] combustion of a structure fire were detected and at levels considered by NIOSH and OSHA to be well below exposure thresholds” (San Diego County Hazmat 2024). Air monitoring conducted by

a third-party contractor (Haley & Aldrich) also was initiated during the incident and continued for an additional 12 hours after the fire was fully extinguished. Haley & Aldrich found that "[a]t no time during the incident did the levels of oxygen deviate from 20.9 percent which is considered normal atmospheric level. Any decrease in the percentage of oxygen would indicate that there was some unknown gas in the atmosphere that was not able to be detected by monitoring equipment. Fortunately, no such deviation was detected. The use of fluoride reactive test strips was negative at all locations. Additionally, hydrofluoric acid was not detected at any of the sampling locations." Water samples were also obtained from runoff created by fire suppression personnel. According to public documents, "The analysis of the samples collected from the runoff water suggests that the water quality is within acceptable limits for most contaminants, especially when considering public health standards for drinking water." The findings also state that "the low levels of metals detected, combined with the absence of more toxic elements like lead and cadmium, suggest that the water poses minimal risk both to human health and the environment."

Furthermore, air quality monitoring and soil sample testing during and after the recent Vistra battery fire in Moss Landing, California, showed that there was no risk to the public throughout the incident, including hydrogen fluoride and particulate matter. Air monitoring was conducted by the USEPA, Vistra, and CTEH, LLC (County of Monterey 2025). DTSC conducted soil sample testing for heavy metals. While initial surface screening of ash and debris detected elevated levels of metals, subsequent soil samples did not. Drinking water was also tested for metals and found the reported levels within the normal drinking water standards and consistent with each water system's historical data.

Truck Deliveries

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 Project would transport materials via SR 33, which is a designated route for the transport of hazardous materials (FMCSA 2025). Adherence to regulations during the storage, transportation, and usage of any hazardous materials would minimize and avoid the potential for significant upset and accident condition impacts.

Pest Management

Consistent with the 2017 County of Fresno Solar Facility Guidelines, the Applicant has prepared a draft Pest Management Plan (PMP) that includes pest-control measures to minimize the likelihood of pests (including weeds) within the Project site and to maximize the ability to reduce the current pest population, if present. A copy of the PMP is provided in Appendix B1. Use of a range of preventative and non-chemical approaches is proposed to control pest populations and stave off infestation. If additional treatment is required, then the PMP protocol favors the use of least-toxic pesticides. The targeted application of a toxic pesticide would be allowed only after all other reasonable non-toxic options are exhausted. Any toxin used on the Project site would be applied by qualified personnel following product label instructions and adherence to applicable regulations.

Other Operations and Maintenance Activities

Operation and maintenance activities otherwise generally would be limited to performing visual inspections, monitoring plant performance, executing minor repairs, and responding to plant adjustment. On intermittent occasions, repairs or replacement of equipment, and other specialized maintenance may occur. Repair and maintenance activities may involve the transportation, use, or temporary storage of a variety of hazardous materials such as batteries, hydraulic fluid, diesel fuel, insulation oil for the transformers, grease, lubricants, paints, solvents, and adhesives. However, due to the largely self-operating nature of the facilities, such actions would occur infrequently.

Equipment containing hazardous materials would be equipped with spill containment areas and battery storage would be in accordance with OSHA requirements such as inclusion of heating, ventilation, air conditioning, fire protection systems, and spill response supplies. All components would have a comprehensive Spill Prevention, Control, and Countermeasure plan, in accordance with applicable federal, State, and local regulations. The preparation and implementation of an HMBP that would describe proper handling, storage, transport, and disposal techniques and methods to be used to avoid spills and minimize impacts in the event of a spill, would further reduce impacts related to hazards to a less-than-significant level.

The required compliance with the numerous laws and regulations discussed above that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the routine use or accidental release of hazardous materials. Compliance with these regulatory requirements would ensure that the Project impact would be **less than significant**.

Decommissioning

Following the Project's anticipated 30-year operational life, Project infrastructure would be decommissioned and the Project site reclaimed in accordance with a County-approved reclamation plan. A Preliminary Closure, Decommissioning, and Reclamation Plan is included as Appendix B2. Pre-decommissioning activities would be conducted to prepare Project facilities for demolition. During pre-decommissioning, hazardous materials and associated residues would be removed from the site. All operational liquids and chemicals would be removed and disposed of in a manner compliant with regulatory requirements in effect at the time of decommissioning. Site decommissioning is anticipated to require one year or more and would entail removal of all Project equipment and demolition of all site structures and foundations. The initial phase would include assessing the site and development of a Final Reclamation Plan. Disposal destinations and locations for decommissioned structures, non-hazardous waste, and debris would be identified and designated in the Final Reclamation Plan. All disposal and transportation of hazardous waste would be conducted with oversight of a licensed state waste contractor to ensure regulatory compliance.

Many Project components are recyclable with numerous recyclers located in Fresno and other nearby counties. Most panel materials would be recycled to the extent feasible, with minimal disposal to occur in landfills in compliance with all applicable laws. The disposal of batteries may be considered hazardous waste when they are discarded and will be disposed of in accordance with the applicable hazardous waste requirements. Solar PV module manufacturers generally provide CdTe module collection and recycling services. Nonetheless, current CdTe PV modules

pass federal leaching criteria for non-hazardous waste, due in part to the low solubility of CdTe, presenting a low risk for cadmium leaching if they reached a landfill.

Requisite compliance with the numerous laws and regulations that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the routine use or accidental release of hazardous materials and ensure that the Project impact would be **less than significant**.

Mitigation: None required.

Criterion b) Whether the Project would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

There are no existing or proposed schools within 0.25 mile of the Heartland Solar Project site. The closest school is approximately 7 miles from the site. Therefore, the Project would cause no impact relating to criterion c). (*No Impact*)

Mitigation: None required.

Criterion c) Whether the Project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

The Heartland Solar Project site is not included either on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 or on one or more of the lists maintained by an agency identified in Section 3.10.1.2, *Environmental Setting*, under the heading *Hazardous Materials Sites*. There is one closed site located within the Project site, along the west side of SR 33; however, the closed status indicates that the overseeing regulatory agency concluded that the site has been cleaned up such that the site no longer poses a risk to people or the environment. Therefore, the Project would cause no impact relating to criterion d). (*No Impact*).

Mitigation: None required.

Criterion d) Whether the Project would result in a safety hazard or excessive noise for people residing or working in the project area due to its being located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

The Heartland Solar Project site is not located within an airport land use plan area or within 2 miles of an active airport. The closest airport is approximately 6.4 miles from the Project site. Therefore, the Project would cause no impact relating to criterion e). (*No Impact*)

Criterion e) Whether the Project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Impact 3.10-3: The Heartland Solar Project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (*Less-than-Significant Impact*)

The construction, operation, and decommissioning of the Heartland Solar Project would not impair implementation of or physically interfere with the Fresno County Operational Area Master Emergency Service Plan coordinated by the Fresno County Office of Emergency Services. The Project would be developed and operated in a sparsely populated, rural area, would not alter or impair any of the existing road networks, and would require relatively low staffing or operation and maintenance activities. Furthermore, the Project would not require lengthy or repeated closures of public roads that could inhibit access by emergency vehicles. During site clearing and construction of the Project, heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures in the event of an emergency (e.g., slowing vehicles traveling behind the truck). For additional details in this regard, see the analysis of Impact 3.18-4 in Section 3.18, *Transportation*, which concludes that the Project would result in a less-than-significant impact associated with the adequacy of emergency access. The Project would not impair implementation of or physically interfere with any adopted emergency response plan or emergency evacuation plan and would have a **less-than-significant** impact regarding criterion e).

Mitigation: None required.

3.10.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230-kilovolt (kV) generation-tie (gen-tie) line extending from the off-site point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Impact 3.10-4: The PG&E Components could affect hazards and hazards materials considerations. (*Less-than-Significant Impact*)

To interconnect the Heartland Solar Project with the electrical grid, PG&E would construct a 1,000-foot-long gen-tie line and construct upgrades to the Tranquillity Switching Station within its existing footprint. If constructed above ground, the gen-tie line would construct approximately three poles owned and operated by PG&E. The construction activities associated with the PG&E Components would be required to comply with, and adhere to, the same design criteria included in CPUC requirements, including CPUC General Order 95. The PG&E Components would not

emit hazardous materials within 0.25 mile of a school, would not be located on a site known to be contaminated, and would not create aviation hazards. The PG&E Components would not use hazardous materials or generate hazardous waste beyond what has been described in the impact analysis of the Solar Facility. The PG&E Components would be developed and operated in a sparsely populated, rural area, would not alter or impair any of the existing road networks or inhibit access by emergency vehicles. Hazards discussed and impact conclusions reached above would be the same for this portion of the site (except for the discussion regarding cleanup of dump sites, which is not relevant to the PG&E Components, as there are no dump sites in the areas where PG&E would construct the PG&E Components). Therefore, activities associated with the PG&E interconnection infrastructure would result in **less-than-significant impacts** related to hazards and hazardous materials.

Mitigation: None required.

3.10.4 Cumulative Effects Analysis

This section presents an analysis of whether the incremental effects of the Project in combination with the incremental impacts of past, present, and reasonably foreseeable future projects that could cause or contribute to a significant cumulative effect related to hazards and hazardous materials. The geographic scope of analysis for cumulative hazards and hazardous materials impacts is limited to the Project site, the routes that would be used to transport hazardous materials, and the immediately adjacent areas. This is because impacts relative to hazards and hazardous materials are generally site-specific and depend on the nature and extent of the hazardous materials release, as well as the soil and groundwater conditions. For example, hazardous materials incidents tend to be limited to a smaller and more localized area surrounding the immediate spill location and extent of the release and could only be cumulative if two or more hazardous materials releases spatially overlapped. The timeframe during which the Project could contribute to cumulative hazards and hazardous materials effects would commence with the initiation of on-site activities. For the solar facility, the Project would cease to contribute to cumulative effects when site reclamation is complete (i.e., an approximately 30-year period). For the PG&E Components, the Project would continue to contribute to cumulative effects in perpetuity because, with the exception of PG&E's potential removal of three gen-tie line poles, the facilities would remain in place and not be decommissioned.

3.10.4.1 Cumulative Effects of the Heartland Solar Project

Criteria a) and b)

Impact 3.10-1c: The Heartland Solar Project would not contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites. (*Less-than-Significant Impact*)

The Heartland Solar Project's incremental impact relating to removal of the illegal dump sites would not combine with the incremental impacts of any of the potential cumulative projects identified in Section 3.1.3, *Cumulative Effects Approach*, in Section 3.1, *Introduction to*

Environmental Analysis, because none of the past, present, or reasonably foreseeable future projects on the list would be implemented in the same locations as the Project. Because the Project's incremental impact could not combine with other projects' impacts, no cumulative effect would exist. The Project's incremental impact would not cause or contribute to any significant adverse cumulative impact and cumulative impacts would be less than significant.

Mitigation: None required.

Impact 3.10-2c: The Heartland Solar Project would not contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (*Less-than-Significant Impact*)

Section 3.1.3, *Cumulative Effects Approach*, in Section 3.1, *Introduction to Environmental Analysis*, includes Table 3.1-1, which lists past, present, and reasonably foreseeable future projects within a 15-mile radius of the Project site. None of these potentially cumulative projects is proposed within the Project site. Because no other projects would cause impacts that could combine with those of the Project, the Project's impacts would not combine with other projects' impacts to cause or contribute to any on-site cumulative effect in these locations. However, some of the potentially cumulative projects would use the same roadways that would be used by the Project for the routine transport of hazardous materials, including SR 33, W. Adams Avenue, and W. Manning Avenue.

The Tranquillity Solar Project, PG&E's Tranquillity Switching Station, and Adams East solar project each would contribute incremental impacts during the relevant timeframe. The incremental impacts from these projects would be associated with relatively low levels of operation and maintenance–related hazardous materials transport. Other present and reasonably foreseeable future projects that would routinely transport hazardous materials would include the Scarlet and Luna Valley solar projects, which have been approved but not yet built, and the Sonrisa Solar Project, which is under consideration by the County but as yet has not been approved. The Project would generate incremental impacts that could combine with the impacts of these other projects during the lifetime of the Project.

All of these projects would be subject to the same regulatory requirements that govern routine transport of hazardous materials, including placarding, load weight limits, and spill prevention and response requirements. In this context, the Project's incremental, less-than-significant impact could not combine with the incremental impacts of other projects to cause or contribute to a significant cumulative effect. The cumulative effect would be less than significant.

Mitigation: None required.

Criterion c)

As analyzed in Section 3.10.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause no impact relating to the emission of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed

school. Therefore, the Project could not cause or contribute to any cumulative effect relating to criterion c). (*No Impact*)

Mitigation: None required.

Criterion d)

As analyzed in Section 3.10.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause no impact resulting from being located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, the Project could not cause or contribute to any cumulative effect relating to criterion d). (*No Impact*)

Mitigation: None required.

Criterion e)

As analyzed in Section 3.10.3, *Direct and Indirect Effects*, the Heartland Solar Project would cause no impact relating to a safety hazard or excessive noise for people residing or working in the project area due to its being located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport. Therefore, the Project could not cause or contribute to any cumulative effect relating to criterion e). (*No Impact*)

Criterion f)

Impact 3.10-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan. (*Less-than-Significant Impact*)

Construction and/or decommissioning of two or more projects that occur at the same time and use the same roads could impair or interfere with access in the event of an emergency. However, the existing road network (as described in Section 3.18, *Transportation*) is sufficient to accommodate a diversity of routes and the generally flat topography would allow for off-road travel in emergency conditions. Therefore, the movement of vehicles could be maintained in such a way as would not interfere with emergency access. In light of these facts, the Project's incremental impact in combination with impacts of other projects would not cause or contribute to a cumulatively significant impact with respect to emergency access. The cumulative impact would be **less than significant**.

Mitigation: None required.

3.10.4.2 Cumulative Effects of the PG&E Components

Impact 3.10-4c: The PG&E Components would not make a cumulatively considerable contribution to any cumulative effect on hazards and hazards materials considerations. (*Less-than-Significant Impact*)

Regarding criteria a) and b), the PG&E Components would not contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites. (*Less-than-Significant Impact*)

The PG&E Components' footprint does not have any illegal dump sites. Because the PG&E Components' incremental impact could not combine with other projects' impacts, no cumulative effect would exist. The PG&E Components' incremental impact would not cause or contribute to any significant adverse cumulative impact and there would be no impact. (*No Impact*)

The PG&E Components would not contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. A less-than-significant impact would result in this regard. Section 3.1.3, *Cumulative Effects Approach*, in Section 3.1, *Introduction to Environmental Analysis*, includes Table 3.1-1, which lists past, present, and reasonably foreseeable future projects within a 15-mile radius of the PG&E Components. None of these potentially cumulative projects is proposed within the PG&E Components site. Because no other projects would cause impacts that could combine with those of the PG&E Components, the PG&E Components' impacts would not combine with other projects' impacts to cause or contribute to any on-site cumulative effect in these locations. However, some of the potentially cumulative projects would use the same roadways that would be used by the PG&E Components for the routine transport of hazardous materials, including SR 33, W. Adams Avenue, and W. Manning Avenue. The Tranquillity Solar Project, PG&E's Tranquillity Switching Station, and Adams East solar project each would contribute incremental impacts during the relevant timeframe. The incremental impacts from these projects would be associated with relatively low levels of operation and maintenance-related hazardous materials transport. Other present and reasonably foreseeable future projects that would routinely transport hazardous materials would include the Scarlet, Luna Valley, and Sonrisa solar projects, which have been approved but not yet built. The PG&E Components would generate incremental impacts that could combine with the impacts of these other projects during the lifetime of the Project. However, all of these projects would be subject to the same regulatory requirements that govern routine transport of hazardous materials, including placarding, load weight limits, and spill prevention and response requirements. In this context, the PG&E Components' incremental, less-than-significant impact could not combine with the incremental impacts of other projects to cause or contribute to a significant cumulative effect. The cumulative effect would be less than significant.

The PG&E Components would have no cumulative impact regarding criteria c), d), or e). As analyzed in Section 3.10.3, *Direct and Indirect Effects*, the PG&E Components would cause no impact relating to the emission of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. Similarly, the PG&E Components would cause no impact resulting from being located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Finally, the PG&E Components would cause no impact relating to a safety hazard or excessive noise for people residing or working in the Project area due to its being located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport. Therefore, the PG&E Components could not cause or contribute to any cumulative effect relating to criteria c), d) or e). (*No Impact*)

Regarding criterion f), the PG&E Components would not cause or contribute to a significant cumulative impact due to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan. A less-than-significant impact would result. Construction and/or decommissioning of two or more projects that occur at the same time and use the same roads could impair or interfere with access in the event of an emergency. However, the existing road network (as described in Section 3.18, *Transportation*) is sufficient to accommodate a diversity of routes and the generally flat topography would allow for offroad travel in emergency conditions. Therefore, the movement of vehicles could be maintained in such a way as would not interfere with emergency access. In light of these facts, the PG&E Components' incremental impact in combination with impacts of other projects would not cause or contribute to a cumulatively significant impact with respect to emergency access. The cumulative impact would be less than significant.

Mitigation: None required.

3.10.5 References

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3.11 Hydrology and Water Quality

This section identifies and evaluates issues related to hydrology and water quality, including surface and ground water quality, groundwater supplies and recharge capacity, drainage patterns, and inundation risk. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project).

This analysis is based in part on the water supply assessment (WSA) prepared for the Project (Appendix L). The WSA includes analysis of the project as initially proposed, including construction and operation of a tertiary wastewater treatment facility and hydrogen fuel generation facility as well as the solar energy generation and energy storage facility which are proceeding for the County's consideration. Only the solar generation and energy storage aspects of the technical report are applicable to this Draft Environmental Impact Report (EIR). The County did not receive any scoping comments pertaining to hydrology or water quality (see Appendix A, *Scoping Report*).

3.11.1 Setting

3.11.1.1 Study Area

The study area for this analysis of potential impacts to hydrology and water quality encompasses the Project site as well as the Westside Subbasin and the greater San Joaquin Valley.

3.11.1.2 Environmental Setting

Regional Setting and Climate

The San Joaquin Valley is surrounded by the Coast Ranges to the west, the San Emigdio and Tehachapi Mountains to the south, the Sierra Nevada to the east, and the Sacramento-San Joaquin Delta to the north (California Department of Water Resources [DWR] 2006). The northern portion of the San Joaquin Valley drains toward the Delta by the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus rivers; the southern portion is internally drained by the Kings, Kaweah, Tule, and Kern rivers that flow into the Tulare drainage basin.

The San Joaquin Valley is comprised of two large basins: the San Joaquin River Basin and the Tulare Lake Basin, which forms the southernmost extent of the San Joaquin Valley and is internally drained. The Project would be located in the northernmost portion of the Tulare Lake Basin, which is bordered by the San Joaquin River Basin to the north (Regional Water Quality Control Board [RWQCB] 2018). The basin is located between the foothills of the Coast Ranges to the west and the San Joaquin River drainage and Fresno Slough to the east. Average annual precipitation varies across the basin from 7 inches in the south to 9 inches in the north (DWR 2006).

Surface Water Hydrology

Surface water resources are limited by the arid climate and consist primarily of intermittent streams originating from the Coast Ranges and agricultural irrigation ditches. Fresno Slough,

located approximately 6 miles east of the Project site, is a distributary[1] of the Kings River that connects the North Fork Kings River to the San Joaquin River. Historically, Fresno Slough was an outlet of the overflow waters of Tulare Lake into the San Joaquin River in flood years. Currently, Fresno Slough delivers water to Mendota Pool and the San Joaquin River from the Kings River in flood years. The main streams in the Westside Subbasin are the Little Panoche and Panoche Creeks, Arroyo Hondo, Cantua, Salt, Martinez, Domengine, and the Arroyo Pasajero (Los Gatos and Zapato Chino Creeks), which all flow eastward from the foothills. Continuous flow measurements are only recorded at Panoche, Cantua, and Los Gatos creeks; the remaining creeks are either not gaged or are only measured for peak flows (WWD 2025). None of the listed creeks flows through the Project site, as shown on **Figure 3.11-1**, *Surface Water Bodies*. Several irrigation drainage ditches are present within the Project site.

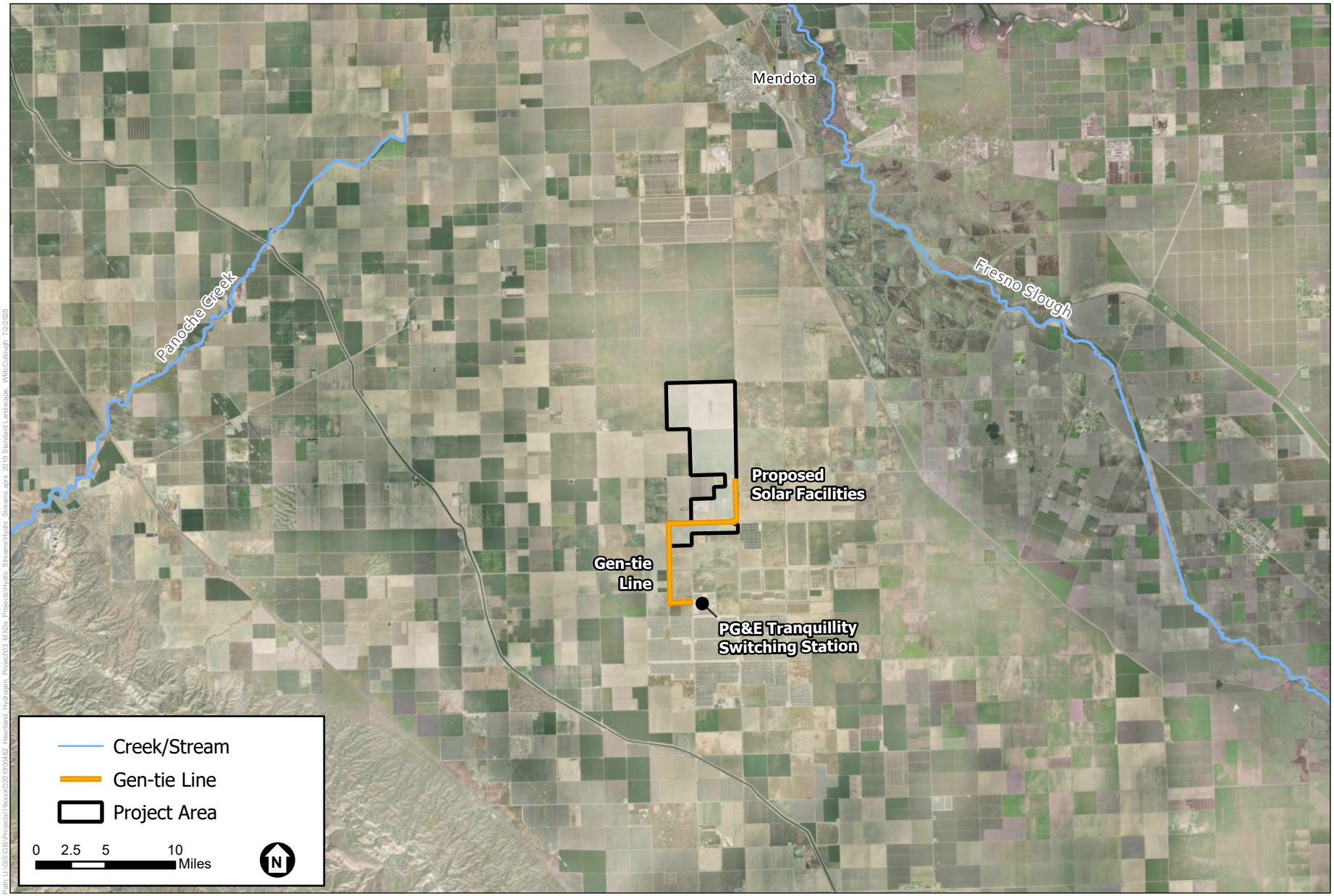
Groundwater

Groundwater on the west side of the San Joaquin Valley is generally of the sulfate or bicarbonate type, and the upper aquifer, generally, is high in calcium and magnesium sulfate (DWR 2006). Groundwater below 300 feet and above the Corcoran Clay shows a tendency of decreased dissolved solids with increased depth. Depth to groundwater near the Project site exceeds 54.9 feet below the ground surface in the upper zone of the aquifer based on the closest well (WWD 2025). Most of the groundwater of the lower aquifer is of the sodium sulfate type, and the difference in quality between the upper and lower aquifers is that the confined zone contains less dissolved solids. Groundwater in western Fresno County can have an upper total dissolved solids range between 2,000 and 3,000 milligrams per liter. High total dissolved solids is one impairment of groundwater in the subbasin, and groundwater at certain locations contains selenium and boron that may limit its use.

The Westside Subbasin is approximately 640,000 acres. The Westlands Water District (WWD) has jurisdiction over 614,000 acres of land in Western Fresno and Kings counties (WWD 2025). The entire Westside Subbasin is analyzed in the Westside Subbasin Groundwater Sustainability Plan (GSP), which was prepared by WWD in January 2020 and updated in 2025. Because the majority of the Westside Subbasin is located within the boundaries of WWD, WWD is the agency that manages the groundwater resources in the Westside Subbasin consistent with the GSP. The GSP identified the safe yield of the groundwater basin to be approximately 267,000-294,000 acre-feet per year (afy), estimated that the subbasin is to be relatively balanced over the historical water budget, and projects sustainable groundwater conditions in the subbasin by 2040 through 2070. The management actions contained in the GSP would ensure water availability from the Westside Subbasin for the next 20 years.

However, according to the GSP, groundwater levels have declined in recent years, indicating that the basin is in an overdraft condition. The GSP notes that the amount of overdraft compared to the capacity of the basin is small. Additionally, there will be a transition period from 2022 through 2030 where pumping reductions will likely be imposed, and by the end of that period the basin is expected to be balanced and sustainable.

[1] Opposite of a tributary, a “distributary” channel flows away from a main stream channel.



SOURCE: ESA, 2022

Heartland Solar Project

Figure 3.11-1
Surface Water Bodies

ESA

Flooding

The Federal Emergency Management Agency (FEMA) is responsible for mapping areas subject to flooding during a 100-year flood event (i.e., 1 percent chance of occurring in a given year). The Project site is not located within a 100-year flood zone or any other special flood hazard zone (FEMA 2009).

Dam Inundation Zones

According to the *Fresno County Multi-Jurisdictional Hazard Mitigation Plan*, the Project site is not located within a dam inundation zone (Fresno County 2024a).

Tsunami and Seiche Hazards

Tsunamis are a series of waves generated by vertical movement of the sea floor, normally associated with earthquakes or volcanic eruptions. Because the Project site is over 70 miles inland from the Pacific Ocean, it is not subject to tsunamis.

Seiches are oscillations of enclosed or semi-enclosed bodies of water that result from seismic events, wind stress, volcanic eruptions, underwater landslides, and local basin reflections of tsunamis. The key requirement for the formation of a seiche is that a body of water be at least partially bounded, allowing for a standing wave to form. There are no large bodies of water nearby. The nearest large body of water is San Luis Reservoir, approximately 46 miles northwest of the Project site. The Project site is not subject to seiche risks.

3.11.1.3 Regulatory Setting

Federal

Clean Water Act

The federal Clean Water Act and subsequent amendments, under the enforcement authority of the U.S. Environmental Protection Agency (USEPA), was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The purpose of the Act is to protect and maintain the quality and integrity of the nation's waters by requiring states to develop and implement state water plans and policies. The Act also sets water quality standards for surface waters and established the National Pollutant Discharge Elimination System (NPDES) program to protect water quality. See, for example, section 401, which governs water quality certifications; section 402, which outlines the NPDES program, including section 402(p), which governs stormwater permitting; section 404, which requires U.S. Army Corps of Engineers' authorization prior to discharging dredged or fill material into the waters of the United States; and section 303(d), which authorizes USEPA to assist states, territories and authorized tribes in listing water quality impaired waters and developing Total Maximum Daily Loads (TMDLs) for such waterbodies. The Clean Water Act authorizes the USEPA to implement pollution control programs such as setting wastewater standards for industry. In California, implementation and enforcement of it is conducted through the California State Water Resources Control Board (SWRCB) and the nine RWQCBs.

National Pollutant Discharge Elimination System Permit

Section 402 of the Clean Water Act contains the NPDES permit system, which regulates municipal and industrial point discharges to surface waters of the U.S. Each NPDES permit for point discharges contains limits on allowable concentrations of pollutants contained in discharges.

The NPDES program also regulates non-point source (i.e., stormwater) pollutants in discharges. Stormwater sources are diffuse and originate over a wide area rather than from a definable point. The goal of NPDES stormwater regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" using structural and non-structural Best Management Practices (BMPs). BMPs can include the development and implementation of various practices including educational measures (workshops informing members of the public of what impacts results when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures, and structural measures (e.g., silt fences, straw wattle, grass swales, and detention ponds). The NPDES permits that apply to the project include the Construction General Permit, as described further below.

Federal Emergency Management Agency

Under Executive Order 11988, FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a 1 percent or greater chance of flooding in any given year (the 100-year floodplain). FEMA's overall mission is to support citizens and first responders to ensure that the United States builds, sustains, and improves capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards. Regarding flooding, FEMA provides information, guidance, and regulation associated with flood prevention, mitigation, and response. Under Executive Order 11988, FEMA requires that local governments covered by the federal flood insurance program pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. Through its Flood Insurance and Mitigation Administration, FEMA manages the National Flood Insurance Program (NFIP), which includes flood insurance, floodplain management, and flood hazard mapping functions. FEMA determines flood elevations and floodplain boundaries and distributes the FIRM maps used in the NFIP. These maps identify the locations of special flood hazard areas, including 100-year floodplains.

Federal regulations governing development in a floodplain are set forth in Code of Federal Regulations Title 44, Part 60. Those regulations enable FEMA to require municipalities participating in the NFIP to adopt certain flood hazard reduction standards for construction and development in 100-year floodplains.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act; Water Code §13000 et seq.) is the primary water quality control law in California. The Porter-Cologne Act established the SWRCB and divided the state into nine regional basins, each overseen by a RWQCB. The nine RWQCBs have the primary responsibility for the coordination and control of water quality within their respective jurisdictional boundaries. The Porter-Cologne Act requires the RWQCBs to

establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Water quality objectives are limits or levels of water quality constituents or characteristics established for the purpose of protecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives, also constitute water quality standards under the federal Clean Water Act. Therefore, the water quality objectives form the regulatory references for meeting state and federal requirements for water quality control. Designated beneficial uses for water bodies in the study area are described in the regional regulatory section (under *Basin Plan*).

NPDES Construction General Permit

Construction associated with projects that would disturb more than 1 acre of land surface affecting the quality of stormwater discharges into waters of the U.S. are subject to the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order 2022-0057-DWQ, NPDES No. CAS000002). The Construction General Permit regulates discharges of pollutants in stormwater associated with construction activity to waters of the U.S. from construction sites that disturb 1 acre or more of land surface, or that are part of a common plan of development or sale that disturbs more than 1 acre of land surface. The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings; and linear underground projects, including installation of water pipelines and other utility lines.

The Construction General Permit requires that construction sites be assigned a Risk Level of 1 (low), 2 (medium), or 3 (high), based both on the sediment transport risk at the site and the receiving waters risk during periods of soil exposure (e.g., grading and site stabilization). The sediment risk level reflects the relative amount of sediment that could potentially be discharged to receiving water bodies and is based on the nature of the construction activities and the location of the site relative to receiving water bodies. The receiving waters risk level reflects the risk to the receiving waters from the sediment discharge. Depending on the risk level, the construction projects could be subject to the following requirements:

- Effluent standards;
- Good site management “housekeeping;”
- Non-stormwater management;
- Erosion and sediment controls;
- Run-on and runoff controls;
- Inspection, maintenance, and repair; or
- Monitoring and reporting requirements.

The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific best management practices (BMPs) designed to prevent sediment and pollutants from contacting stormwater from moving off site into receiving waters. The BMPs fall into several categories, including erosion control, sediment control, waste management and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the section 303(d) list for sediment.

The SWPPP must be prepared before construction begins. The SWPPP must contain a site map(s) that delineates the construction work area, existing and proposed buildings, parcel boundaries, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project area. The SWPPP must list BMPs and the placement of those BMPs that the applicant would use to protect stormwater runoff. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the section 303(d) list for sediment. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing and fueling. The Construction General Permit also sets post-construction standards (i.e., implementation of BMPs to reduce pollutants in stormwater discharges from the site following construction).

In the Project area, the Construction General Permit is implemented and enforced by the Central Valley RWQCB, which administers the stormwater permitting program. Dischargers must electronically submit a notice of intent and permit registration documents to obtain coverage under this Construction General Permit. Dischargers are to notify the Central Valley RWQCB of violations or incidents of non-compliance and submit annual reports identifying deficiencies in the BMPs and explaining how the deficiencies were corrected. The risk assessment and SWPPP must be prepared by a State Qualified SWPPP Developer, and implementation of the SWPPP must be overseen by a State Qualified SWPPP Practitioner. A legally responsible person, who is legally authorized to sign and certify permit registration documents, is responsible for obtaining coverage under the permit.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) authorizes local agencies to manage groundwater in a sustainable manner and allows limited state intervention when necessary to protect groundwater resources. SGMA defined "sustainable groundwater management," established a framework for local agencies to develop plans, and implement strategies to sustainably manage groundwater resources, established basin prioritization (ranked from very low to high priority), and set a 20-year timeline for implementation. Basins are prioritized under the SGMA by the DWR.

The Project site is located within the Westside Groundwater Basin of Groundwater Basin 5-022.09. As described under local regulations, the WWD serves as Groundwater Sustainability Agency for this basin. WWD prepared and adopted an amended GSP in 2025 (WWD GSA and County of Fresno GSA 2025).

Local

Central Valley Regional Water Quality Control Board

Water Quality Control Plan for the Tulare Lake Basin

The Central Valley RWQCB (Region 5F) Water Quality Control Plan (commonly referred to as the Basin Plan) for the Tulare Lake Basin was adopted by the RWQCB as revised in 2018 (RWQCB

2018). The Basin Plan is the master water quality control planning document used to designate beneficial uses and surface and ground water quality objectives. The RWQCB is tasked with implementing the adopted Basin Plan through planning, permitting, and enforcement of established water quality objectives. In accordance with State Policy for Water Quality Control, the RWQCB employs a range of beneficial use designations for surface waters (including creeks, streams, lakes, and reservoirs), groundwater, marshes, and mudflats that serve as the basis for establishing water quality objectives, discharge conditions, and prohibitions. The Basin Plan has identified existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdictional planning area. The Project site is within Detailed Analysis Unit No. 235 within the Delta-Mendota Basin hydrologic unit. The Basin Plan designates the beneficial uses as municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PRO), non-contact water recreation (REC-2), and wildlife habitat (WILD).

Fresno County

Fresno County 2024 General Plan

The following policies related to drainage and flood control that are identified in the Public Facilities and Services Element of the Fresno County General Plan (Fresno County 2024b) are applicable to the Project:

> ***Policy PF-E.9: 100-year Flood Protection.*** The County shall require new development to provide protection from the 100-year flood as a minimum.
>
> ***Policy PF-E.11: Natural Site Drainage Pattern.*** The County shall encourage project designs that minimize drainage concentrations and maintain, to the extent feasible, natural site drainage patterns.
>
> ***Policy PF-E.13: Natural Storm Water Drainage Systems.*** The County shall encourage the use of natural storm water drainage systems to preserve and enhance natural drainage features.
>
> ***Policy PF-E.14: Retention-Recharge Basins.*** 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: Basin Landscaping and Open Space.*** The County should require that retention-recharge basins be suitably landscaped to complement adjacent areas and should, wherever possible, we made available to the community to augment open space and recreation needs.
>
> ***Policy PF-E.16: Minimal Sedimentation and Erosion.*** 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-E.17: Groundwater Recharge.*** The County shall encourage the local agencies responsible for flood control or storm drainage retention-recharge basins located in soil strata strongly conducive to groundwater recharge to develop and operate those basins in such a way as to facilitate year-round groundwater recharge.

Policy PF-E.20: Storm Water Drainage Discharges. The County shall require new development of facilities near rivers, creeks, reservoirs, or substantial aquifer recharge areas to mitigate any potential impacts of release of pollutants in flood waters, flowing rivers, streams, creeks, or reservoir waters.

Policy PF-E.21: Best Management Practices. The County shall require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and shall encourage the urban storm drainage systems and agricultural activities to use BMPs.

The following policies identified in the Open Space and Conservation Element of the Fresno County General Plan (Fresno County 2024b) are applicable to the Project:

Policy OS-A.5: Groundwater Recharge. The County shall encourage, where economically, environmentally, and technically feasible, efforts aimed at directly or indirectly recharging the county's groundwater.

Policy OS-A.6: Groundwater Recharge Protection. The County shall ensure that development does not limit the capacity or function of groundwater recharge areas.

Policy OS-A.10: Sustainable Groundwater Management. The County shall coordinate with the relevant Groundwater Sustainability Agency(ies) concerning their Groundwater Sustainability Plan(s) and refer any substantial proposed General Plan amendment to the agency for review and comment prior to adoption. The County shall give consideration to the adopted groundwater sustainability plan when determining the adequacy of water supply.

Policy OS-A.14: Floodplain Protection. The County shall require the protection of floodplain lands and, where appropriate, acquire public easements for purposes of flood protection, public safety, wildlife preservation, groundwater recharge, access, and recreation.

Policy OS-A.18: Groundwater Quality Protection. 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 non-domestic 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.19: Water Discharge Pollution. The County shall require new development near rivers, creeks, reservoirs, or substantial aquifer recharge areas to mitigation any potential impacts of release of pollutants in storm waters, flowing river, stream, creek, or reservoir waters.

Policy OS-A.20: Minimization of Sedimentation and Erosion. 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 OS-A.21: Best Management Practices. The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff.

Policy OS-A.22: Water Quality Monitoring. The County shall support the monitoring of water quality and necessary measures to prevent contamination, including the prevention of hazardous materials from entering the wastewater system.

Policy OS-A.24: Low Risk for Groundwater Degradation. In areas with increased potential for groundwater degradation (e.g., areas with prime percolation capabilities, coarse soils, and/or shallow groundwater), the County shall only approve land uses with low risk of degrading groundwater.

Westlands Water District Groundwater Sustainability Agency

Amended 2025 Groundwater Sustainability Plan for the Westside Subbasin

The Westside Subbasin has been identified by DWR as a critically overdrafted and high priority groundwater subbasin (DWR 2020). Under SGMA, groundwater basins in this condition are required to prepare and be managed under a groundwater sustainability plan (GSP). The WWD, acting as groundwater sustainability agency, has prepared a GSP to characterize groundwater conditions in the Westside Subbasin, to evaluate and report on conditions of overdraft, to establish sustainability goals and management criteria for the subbasin, and to describe projects and management actions WWD intends to implement to achieve (groundwater basin) sustainability by 2040. While this 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 groundwater sustainability. The sustainability goal of the WWD (acting as groundwater sustainability agency) is to "continue agriculture production while maintaining groundwater supplies and quality for all beneficial users of groundwater" The goal of the GSP is to develop projects and management actions that result in the sustainable management of groundwater resources of the Subbasin for the long-term community, financial, and environmental benefits of residents and businesses in the Subbasin. The sustainability goal is to ensure that by 2040, and thereafter within the (50-year) planning and implementation horizon (extending to 2070), the Subbasin is operated within its sustainable yield and does not exhibit undesirable results[2] (WWD GSA 2025).

[2] "Undesirable results" in the context of SGMA and in the groundwater sustainability plan means any of the following conditions: chronic lowering of groundwater levels, reduction in groundwater storage, subsidence, degraded groundwater quality, or depletion of interconnected surface waters.

3.11.2 Significance Criteria

The Project would result in significant impacts to hydrology and water quality if it would:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water 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 offsite,

   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, or

   iv. impede or redirect flood flows.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation;

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.11.3 Direct and Indirect Effects

3.11.3.1 Methodology

This environmental analysis of the potential impacts related to hydrology and water quality is based on a review of the results of the site-specific WSA (Appendix L), a review of literature and database research, and the Fresno County General Plan.

The Project would be regulated by the various laws, regulations, plans, and policies summarized in Section 3.11.1.3, *Regulatory Setting*. Compliance by the Project with applicable, independently enforceable requirements is assumed in this analysis, and local and state agencies would be expected to continue to enforce applicable requirements to the extent that they do so now.

After considering the implementation of the Project described in Chapter 2, *Project Description*, and compliance with the required regulatory requirements, the analysis below identifies if the defined significance thresholds are exceeded and, therefore, a significant impact would occur. For those impacts considered to be significant, mitigation measures are proposed to the extent feasible to reduce the identified impacts.

3.11.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Impact 3.11-1: The Heartland Solar Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. (*Less-than-Significant with Mitigation Incorporated*)

Construction

The Heartland Solar Project site is relatively flat, with only a modest potential for any concentrated runoff to occur. This condition would not substantially change with Project construction, which would include vegetation removal, grubbing, grading, and installation of roads and other facilities. Construction activities would involve the use of bulldozers, graders, trucks, and various other types of equipment, and would involve modest changes to onsite topography. These activities would potentially loosen existing surface soils and sediments, increasing the potential for erosion during storm events. Additionally, the use of construction equipment may involve the accidental release of fuel, oils, brake dust, lubricants, antifreeze, and other potentially hazardous substances at the construction site. Application of water for dust suppression could generate runoff that may entrain and transport pollutants (e.g., sediment, dissolved solids, or other pollutants). These water quality pollutants could be delivered to surface water bodies during storm events, and/or be infiltrated into groundwater and the underlying aquifer, resulting in the degradation of water quality.

Potential impacts on water quality from erosion and sedimentation are expected to be localized and temporary during construction. However, given the scale of the Heartland Solar Project's soil-disturbing site work, water quality degradation or unauthorized discharges could occur. Pursuant to County grading permit requirements, final approval shall not be given until all work, including installation of all drainage facilities and their protective devices, and all erosion-control measures have been completed in accordance with the final approved Grading Plan, and the required reports have been submitted. To limit potential impacts and in compliance with the County's grading permit, the Project would be required to implement a SWPPP during construction. Per **Mitigation Measure 3.11-1: Stormwater Pollution Prevention Plan**, the SWPPP would include BMPs designed to prevent the occurrence of soil erosion and discharge of other construction-related pollutants that could otherwise contaminate water quality. This mitigation measure (and SWPPP) would be applicable to all areas of the Heartland Solar Project site, including the solar fields and the gen-tie line alignment. Site-specific BMPs could include strategically placed silt fences and straw wattles to minimize erosion onsite and reduce or otherwise prevent conditions of erosion and storm water runoff.

Any activity that results in the accidental release of hazardous or potentially hazardous materials could result in water quality degradation. During construction of the Project, diesel and gasoline fuels and other hazardous materials such as oils, solvents, hydraulic fluids, and paints commonly associated with construction equipment may be stored and used onsite. As discussed in Section 3.10, *Hazards and Hazardous Materials*, these materials would be stored and handled in compliance with numerous regulations that cover the transportation, storage, use, and disposal of

hazardous materials. Therefore, with compliance with the SWPPP as required by **Mitigation Measure 3.11-1** and adherence to hazardous materials regulations, the impact on water quality would be **less than significant with mitigation incorporated**.

Operation and Maintenance

Up to5 afy of non-potable water would be required during operation and maintenance for PV solar panel washing and general maintenance. The need for panel washing would be infrequent (e.g., months-to-years between washings, if at all) and would be determined based on operating considerations. If panel washing occurs, demineralized water would be sprayed on the PV panels to remove dust or a dry-cleaning method may be used. If panel washing is not needed, then this facility's water demand during operation and maintenance would be 1 acre-foot per year. The relatively low amount of water used during this phase would be insufficient to generate significant runoff and would be expected to evaporate or infiltrate into the ground. For these reasons, the Heartland Solar Project's impacts on water quality during operation and maintenance would be **less than significant**.

Decommissioning and Site Reclamation

Potential impacts resulting from decommissioning and site reclamation activities would generally be similar to those described for construction, namely involving the potential for erosion and/or release of construction-related water quality pollutants. Decommissioning and site reclamation activities would be required to comply with the same applicable federal, state, and local water quality regulations. Ground disturbing activities during decommissioning and site reclamation (as with construction) would require conformance with Fresno County grading permit requirements and be subject to **Mitigation Measure 3.11-1**, including the preparation and implementation of a site-specific SWPPP. Storm water management measures would be required to be identified and implemented to effectively control erosion and sedimentation and other construction related pollutants during decommissioning and site reclamation. Therefore, the potential impact of Heartland Solar Project decommissioning activities on water quality would be **less than significant with mitigation incorporated**.

Mitigation Measure 3.11-1: Stormwater Pollution Prevention Plan

Prior to the issuance of a grading permit, the Project proponent/operator shall submit to the County a Stormwater Pollution Prevention Plan (SWPPP) complying with requirements of the Construction Stormwater General Permit. The SWPPP shall be designed to minimize runoff and shall specify best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sediment or any other pollutants from moving offsite and into receiving waters. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. Recommended best management practices to be incorporated in the SWPPP may include, but would not be limited to, the following:

a. Minimization of vegetation removal;

b. Implementing sediment controls, including silt fences a necessary;

c. Installation of a stabilized construction entrance/exit and stabilization of disturbed areas;

d. Properly containing and disposing of hazardous materials used for construction onsite;

e. Properly covering stockpiled soils to prevent wind erosion;

f. Proper protections and containment for fueling and maintenance of equipment and vehicles; and

g. Appropriate disposal of demolition debris, concrete and soil, and aggressively controlling litter.

h. Cleanup of silt and mud on adjacent street due to construction activity.

i. Checking all lined and unlined ditches after each rainfall.

j. Install additional erosion control measures as may be required due to uncompleted grading operations or unforeseen circumstances which may arise.

Significance after Mitigation: Less than significant. With implementation of a SWPPP incorporated into construction documents, including requirements for site specific BMPs developed to reduce runoff and control erosion as well as clear guidance on containing and properly disposing of hazardous materials, potential water quality impacts of the Heartland Solar Project would be reduced to less-than-significant levels.

Criterion 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.

Impact 3.11-2: The Heartland Solar Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin. (*Less-than-Significant Impact*)

Construction and Decommissioning

Construction and decommissioning activities would occur on a total of approximately 2,353 acres. The Project's construction activities are anticipated to begin in 2025 and occur simultaneously. Construction is expected to require up to 40 months. Construction activities would require water for dust suppression, soil compaction, grading activities, equipment cleaning, vehicle wash-downs, washout basins, re-compaction of backfill materials, concrete production, and other general engineering-related activities.

Construction and decommissioning water may be sourced from any of the following: (1) groundwater pumped from existing or new wells on the Heartland Solar Project site, (2) groundwater purchased from owners of wells on neighboring properties, or (3) water supplied by WWD through a municipal and industrial[3] (M&I) service agreement.

Construction water use is estimated based on water demand for similar solar installations in the region, such as the Sonrisa Solar Project. Construction water use for the solar substation, and generation-tie line was estimated using a conservative estimate based on projects of similar size and duration (50 gallons per day [gpd] per 1,000 square feet). Water use for decommissioning

[3] Pursuant to WWD's letter of April 8, 2025, which is appended to the WSA, the Project is eligible to receive water through the WWD's municipal and industrial water supply and the land will continue to have access to the WWD distribution system, subject to M&I water regulations.

was assumed to be 10 percent less than construction water use, with decommissioning assumed to be completed within 1 year (12 months).

Based on these assumptions, the Project's total construction water use is estimated to be up to 400 acre-feet (af) over the 40-month construction period. The Project's decommissioning water use is estimated to be up to 150 af in total (Cass 2025). Decommissioning water demand would mainly be associated with dust control and would occur over the discrete timeframe required to remove above ground components and reclaim the site. Additional details regarding decommissioning and site reclamation are provided in Appendix B2.

According to the WSA (Appendix L), the Westside Subbasin is overdrafted. However, the decline represents less than 0.04 percent of total outflow and less than 6 percent of total groundwater pumping. While the subbasin is experiencing overdraft, the groundwater budget is relatively balanced over the historical water budget period. The Westside Subbasin GSP simulates a decline in groundwater storage averaging 19,000 afy. Consistent with GSP regulations and DWR's Sustainable Management Criteria Best Management Practices technical memorandum, sustainable yield has been calculated for the historical and projected water budget periods using the model. The estimated sustainable yield for the historical period is 305,000 afy. The estimated sustainable yield for the projected period (from the baseline model scenario within the 2025 WWD GSP) ranges from 267,000 to 294,000 afy, depending on the anticipated future climate specified in the model.

According to the WSA, the Heartland Solar Project would require a total of approximately 400 af over 40 months for construction activities, or approximately 133 afy. If the construction water were to be equally distributed over 3 years, this would equate to approximately 0.04 percent of the basin safe yield for each of the 3 years of construction. Project decommissioning is expected to take 12 months and require 150 af, or 0.05 percent of the basin safe yield. WWD, as owner of the groundwater rights within the Heartland Solar Project site, has agreed to authorize up to 150 afy during construction for every 320 acres acquired, for a total of 1,107 afy of water allotted for Project construction. Given that Project water demand during construction would be approximately 14 percent of the WWD-allotted water supply, the WSA concludes that there is sufficient water supply available to meet Project construction demands. While WWD has not yet authorized water allocations for Project decommissioning, it can be assumed that the remaining water supply allocated for Project construction and operations, discussed below, can accommodate the 150 af of water demand for Project's estimated one-year decommissioning period. The WSA further concludes that any potential impacts on the subbasin would be accounted for by following the management actions included in the GSP, including a groundwater allocation plan which would result in less groundwater pumping due to imposed pumping reductions. Therefore, Project construction and decommissioning would not substantially decrease groundwater supplies or interfere with groundwater recharge, and impacts from Project construction would be **less than significant**.

Operation and Maintenance

Industrial water use at the proposed facility may include periodic (i.e., at most biannual) washing of the PV solar panels, equivalent to approximately 5 afy (Appendix L). This analysis conservatively assumes water would be required for panel washing. Water for panel washing if

needed is expected to be provided via pipeline delivery through a WWD M&I service agreement, from onsite conveyance infrastructure or nearby wells (Appendix L). Domestic water use at the Project site would be associated with the three employees working a single 8-hour shift. The facility would have three restrooms with three lavatories and three toilets each. Domestic water use for these employee facilities was estimated to be approximately 18 gpd (0.02 afy). The WSA assumes that bottled water would be available as onsite drinking water for employed personnel and would not contribute to the domestic groundwater demand.

WWD, as the owner of the groundwater rights at the Project site, has authorized up to 2 afy of groundwater pumping annually for every 320 acres, which would be approximately 14 afy for the 2,362-acre Project site. The Project would utilize approximately 37 percent of the annual water allotted to the Project by WWD and would therefore have adequate groundwater supply during the Project's operations and maintenance period. As explained in the WSA, the worst-case scenario, assumed to occur during multiple dry years, estimates zero water availability through the Central Valley Project. During such supply shortages, the U.S. Bureau of Reclamation would implement its M&I Water Shortage Supply Policy to deliver Central Valley Project water to M&I customers (U.S. Bureau of Reclamation 2017). Thus, it is assumed that with coverage under this policy, WWD would be able to provide sufficient supplies to serve the Project's estimated water demand, up to the authorized water allocation of 14 afy over the next 20 years as required by California Water Code sections 10610 through 10656. If WWD were to supply CVP water to the project under an M&I service agreement, demand on the Westside basin would be reduced due the Project's use of surface water to meet O&M water demand, consistent with GSP protocols (WWD 2025).

The amount of water used for O&M would be relatively small, especially if panel washing is not needed. As stated above, if O&M water demand were met with groundwater, any potential impacts on the subbasin would be accounted for by following the management actions included in the GSP, including a groundwater allocation plan which would result in less groundwater pumping due to imposed pumping reductions.

The solar panels would be installed upon trackers. Although the panels would result in the addition of new impervious surfaces, the relatively small and separated nature of the trackers would mean that stormwater falling on the panels would drain off to the surrounding soil and infiltrate into the ground, as it does now.

Therefore, relative to decreasing groundwater supplies or interfering with groundwater recharge, impacts would be **less than significant**.

Mitigation: None required.

Criterion c.i-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: 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 offsite; 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; or iv) impede or redirect flood flows.

Impact 3.11-3: The Heartland Solar Project would not 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: i) Results in substantial erosion or siltation on- or off-site; ii) substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) creates or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff; or iv) impedes or redirects flood flows. (*Less-than-Significant with Mitigation Incorporated*)

Construction and Decommissioning

The Heartland Solar Project site's drainage would be designed and graded to follow the natural existing drainage pattern. Onsite stormwater detention basins may be constructed, operated, and maintained within the boundary of the sites to retain stormwater that could otherwise runoff in a storm event. Pursuant to **Mitigation Measure 3.11-1**, site preparation and construction activities would be performed in accordance with a SWPPP that includes stormwater BMPs to reduce the adverse effects of construction and during the O&M phase, if deemed necessary based on pre-construction design analysis and County of Fresno grading requirements. Implementation of the BMPs required by the SWPPP would prevent erosion and siltation during construction. Additionally, such measures would minimize the release of potentially hazardous materials through proper containment.

Decommissioning and reclamation of the Heartland Solar Project site would return the site to a condition comparable to that in place before construction consistent with the site decommissioning and reclamation plan (Appendix B2). Given the site's relatively flat topography, and adherence to the **Mitigation Measure 3.11-1**, as outlined in a site specific SWPPP, erosion and runoff during construction and decommissioning is unlikely to be substantial. Therefore, impacts related to erosion and siltation would be less than significant with mitigation.

Heartland Solar Project construction would involve ground disturbance activities (e.g., grubbing, grading, and excavation), which could change drainage patterns and result in on-site or off-site flooding if stormwater is not properly controlled. In addition, the Project would result in a minor increase in impervious surfaces which could reduce infiltration and increase localized areas of flooding. However, the majority of the Project site would remain pervious or capable of infiltrating precipitation into the groundwater table. Pursuant to **Mitigation Measure 3.11-1**, the Project would develop and implement a SWPPP and associated BMPs to limit erosion or siltation, and runoff with sediment or other pollutants from leaving the site and entering surrounding waterways. Site preparation and construction activities would be performed in accordance with a

SWPPP, which incorporates stormwater BMPs to reduce the adverse effects of erosion and sedimentation (e.g., the use of water trucks to manage dust; silt fencing, straw bales and temporary catch basins, and inlet filters to control stormwater; and truck tire muck shakers, or similar devices, to prevent mud and debris from being carried onto roadways). Implementing the BMPs required for the SWPPP would prevent also flooding during construction through the use of temporary sediment basins. Temporary sediment basins to manage stormwater would also capture runoff and infiltrate stormwater into the subsurface, preventing substantial flooding-related impacts, while also recharging the groundwater table. The required SWPPP also would include specific components to reduce polluted discharge.

Decommissioning activities for the Project would be similar to construction activities, but would return the site to pre-Project conditions. Decommissioning activities would also follow applicable BMPs outlined in the SWPPP prepared for the Project, per **Mitigation Measure 3.11-1**. Therefore, impacts related to flooding would be less than significant with mitigation incorporated.

Because the Project would be designed to follow natural drainage patterns, Project construction and decommissioning would not substantially alter the existing drainage patterns of the sites or impede or redirect flows.

As described above, implementation of **Mitigation Measure 3.11-1** and compliance with federal and state laws and local requirements would ensure the impacts associated with construction and decommissioning would be **less than significant with mitigation incorporated**.

Operation and Maintenance

To manage stormwater during the O&M phase, if deemed necessary based on pre-construction design analysis and County of Fresno grading requirements, the Project could construct, operate, and maintain stormwater retention basins to retain stormwater that could otherwise runoff in a storm event. The dimensions of any basin determined to be needed would be determined during final design based on County grading ordinance requirements. Basins would be expected to remain dry except during or soon after a rain event. Maintenance of the basins would be limited to vegetation management to maintain capacity and to control weeds. These basins would help to reduce surface water runoff and would not 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.

Once operational, the Project would be operated, maintained, and managed in a manner that would conform to all regulatory requirements in place to limit runoff and control erosion. Therefore, impacts during the operation and maintenance phase would be **less than significant**.

Mitigation: Implement Mitigation Measure 3.11-1.

Significance after Mitigation: Less than significant.

Criterion d) Whether the Project would be located in a flood hazard, tsunami, or seiche zone, and risk the release of pollutants due to Project inundation.

The Heartland Solar Project would not be located in a flood hazard, tsunami, or seiche zone, and therefore would cause no impact related to a risk of releasing pollutants due to Project inundation. (*No Impact*)

According to the FEMA flood maps and the Fresno County Multi-Hazard Mitigation Plan, the Project site does not lie within a 100-year flood zone or any other special flood hazard zone and are not within a dam inundation zone. Additionally, the Project site is over 70 miles inland from the Pacific Ocean and there are no large bodies of water nearby (the nearest large body of water is San Luis Reservoir, approximately 46 miles northwest of the Project site). Therefore, the Project site is not at risk of being inundated by a tsunami or seiche. There would be no impact regarding the release of pollutants due to such hazards.

Mitigation: None required.

Criterion e) Whether the Project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact 3.11-4: The Heartland Solar Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (*Less-than-Significant with Mitigation Incorporated)*

As previously discussed, the Heartland Solar Project would be regulated under the Westside Subbasin GSP and the Basin Plan. The Project would not substantially increase impervious surface area; thus, groundwater recharge would be generally maintained across the site with the Project.

The Project would include soil disturbing activities during construction and would be required to comply with the **Mitigation Measure 3.11-1**, which would require implementation of BMPs as part of a SWPPP or comparable County requirements. With adherence to the SWPPP, these Project facilities would not result in water quality violations or conflict with the Basin Plan. Therefore, the resulting impact would be **less than significant with mitigation incorporated**.

Although the Westside Subbasin is considered overdrafted, the water used for construction, of the Project would be a considerably small portion (around 0.04 percent) of the yearly sustainable yield of the groundwater basin. Water used during dust control not lost to evaporation would return to the ground potentially recharging the groundwater basin. During the operations and maintenance, and decommissioning phases, water demand would decrease. Pursuant to the WSA (Appendix L), the Project's water demand would not exceed available resources or otherwise conflict with the GSP. WWD can adequately supply the Project with water during all phases. The GSP for the Westside Subbasin (managed by WWD) includes projects that would help offset groundwater use in the basin. Projects include metering of water supply, stormwater capture, demand reduction through reduced watering, surface water transfer, the purchase of groundwater credits, participation

in recharge projects, and the use of reclaimed water for outdoor watering, among others. Therefore, the construction, operation, and decommissioning of the Project would not interfere with the GSP, resulting in a **less than significant impact**.

Mitigation: Implement Mitigation Measure 3.11-1.

Significance after Mitigation: Less than significant.

3.11.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. These include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. The upgrades within the switching station, including the installation of a new 230 kV breaker-and-a-half configuration, would be within the existing Tranquillity Switching Station footprint.

Impact 3.11-5: The PG&E Components could affect hydrology and water quality considerations. (*Less-than-Significant Impact)*

As described in Table 2-1, the gen-tie line would occur on approximately 2 acres with portions either above or underground. For underground sections each of the approximately 3 pole structures would be installed with a maximum soil disturbance depth of 50 feet. Fiber lines would be either collocated on the gen tie line or placed in underground conduit (approximately 5 feet deep). It is expected that water would likely be procured by PG&E and used for dust control and other site work. Due to the limited area of disturbance required for this work, water demand would be minimal and temporary, placing a small or no impact on the local groundwater supply.

As discussed in Section 3.5, *Biological Resources*, it is anticipated that PG&E would implement avoidance and minimization measures consistent with the Habitat Conservation Plan (HCP) for the San Joaquin Valley. As standard protocols, PG&E also implements best management practices to minimize site disturbance to the maximum extent practicable (PG&E 2025). These standard protocols limit track out and runoff as applicable to staging and work areas. Consistent with PG&E standard practices, ground disturbance associated with installation of poles and use of work areas for stringing lines would be limited to the immediate work areas to the maximum extent practicable. Although not quantified, it is anticipated that water may be temporarily used during construction mainly for dust control purposes and other site work. There would be no ongoing demand for water resources associated with the PG&E Components following construction. The PG&E Components would have a minimal demand for groundwater; thus, the PG&E Components would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge.

The sites proposed for the PG&E Components (as with the Project) are relatively flat; accordingly, there is little risk of erosion or runoff during ground disturbance. As discussed in Section 3.5, *Biological Resources*, PG&E HCP for the San Joaquin Valley requires best practices and

avoidance measures to limit effects to biological resources and associated habitats (Jones & Stokes 2006). Additionally, it is anticipated that PG&E would implement standard best practices for vegetation management (PG&E 2025). This work would be conducted in a manner consistent with CPUC general orders and industry standards. Given the minimal risk of erosion and runoff combined with the implementation of PG&E standard BMPs, construction and operation of the PG&E Components would result in a **less-than-significant impact** on hydrology and water quality.

Mitigation: None required.

3.11.4 Cumulative Effects Analysis

Significant cumulative impacts related to hydrology and water quality could occur if the incremental impacts of the Project combined with the incremental impacts of one or more of the cumulative projects identified in Section 3.1.3, *Cumulative Effects Approach*. The geographic scope of analysis for cumulative hydrology and water quality impacts encompasses and is limited to the Project site and the Westside Groundwater Basin. The timeframe during which the Project could contribute to cumulative hydrology and water quality effects would commence with Project construction and would conclude with the completion of site reclamation activities in approximately 35 years.

3.11.4.1 Cumulative Effects of the Heartland Solar Project

Criterion a)

Impact 3.11-1c: The Heartland Solar Project would not result in a cumulatively considerable contribution to any significant cumulative effect due to violation of any water quality standards or waste discharge requirements or other substantial degradation of surface or groundwater quality. (*Less-than-Significant with Mitigation Incorporated*)

The Heartland Solar Project's incremental, less-than-significant impact could combine with the incremental impacts of other projects identified in Section 3.1.3, *Cumulative Effects Approach*, that would be developed in the relevant geographic area. However, all of the potentially cumulative projects also would be subject to the state and local stormwater regulations and standards described in Section 3.8.1.3, *Regulatory Setting* and would be expected to comply with requirements (such as those in the County's grading or building permits) similar to those set forth in **Mitigation Measure 3.11-1**. These standards and requirements have been established at levels intended to maintain acceptable cumulative conditions and would be implemented to control, capture, and treat stormwater runoff to prevent adverse impacts to water quality. For example, cumulative projects that disturb 1-acre or more of ground would be required by State and local stormwater regulations and standards to capture and treat stormwater prior to allowing that water to exit the site. The captured water would be released from the site using established BMPs such as bioswales, infiltration basins, or other BMPs (subject to Fresno County approval) that would result in the treatment of water prior to exiting the site. State and local hazardous materials regulations and standards, described in the Section 3.10.1.3, *Regulatory Setting*, have been established to address the transportation, storage, use, and disposal of hazardous materials, which would prevent adverse impacts to water quality. The incremental impact of the Project, combined with impacts of other projects in the area, would not cause a cumulatively considerable contribution

to any significant cumulative impact related to criterion a). Therefore, the Project's cumulative effects would not be cumulatively considerable, and this impact would be **less than significant with mitigation incorporated**.

Mitigation: Implement Mitigation Measure 3.11-1, Stormwater Pollution Prevention Plan.

Significance after Mitigation: Less than significant.

Criterion b)

Impact 3.11-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a substantial decrease in groundwater supplies or substantial interference with groundwater recharge that could impede sustainable groundwater management of the basin. (*Less-than-Significant Impact*)

The geographic scope for the analysis of cumulative effects related to groundwater consists of the Westside subbasin, where the Heartland Solar Project is proposed. As discussed, the Project would generate less-than-significant effects related to groundwater demand, but would not impede sustainable management of the groundwater basin. The Project would contribute a less-than-significant incremental contribution to cumulative effects, primarily associated with construction water demand. The implementation of the GSP described in Section 3.11.1.3, *Regulatory Setting,* would require cumulative projects to verify that groundwater supplies are available during normal, dry, and multiple dry years, consistent with the groundwater sustainability goals of the GSP. Most of the cumulative projects are solar facilities. Although the solar projects would result in the addition of some new impervious surfaces, due to the type of facility proposed, there would be a relatively small added impervious surface area and related infrastructure such as the solar arrays would be sufficiently dispersed to would allow precipitation falling on the panels to drain off to the surrounding soil and infiltrate into the ground, as is does now. Moreover, these types of projects (unlike residential development, for example), do not generate a high level of ongoing water use or demand that would impede sustainable groundwater management. Cumulative projects that add substantial impervious surfaces would be required by State and local stormwater regulations and drainage standards to capture and treat stormwater prior to allowing that water to exit the site. The captured water would percolate into the soil or be released from the site using established BMPs such as bioswales, infiltration basins, or other pretreatment devices that would result in the water infiltrating into the ground. Therefore, based on the assumed compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the area would not cause or contribute to a significant cumulative impact related to substantial decreases in groundwater supplies or interference with groundwater recharge. The Project's cumulative effect would not be cumulatively considerable, and this impact would be less than significant.

Mitigation: None required.

Criterion c)

Impact 3.11-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to substantial alteration of existing drainage patterns in a manner that: i) Results in substantial erosion or siltation on- or off-site; ii) substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) creates or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff; or iv) impedes or redirects flood flows. (*Less-than-Significant with Mitigation Incorporated*)

The Heartland Solar Project would contribute an incremental, less-than-significant contribution to cumulative conditions. State and local stormwater regulations and standards have been established to achieve levels that would sufficiently control, capture, and treat stormwater runoff to prevent erosion, flooding, or exceedances of stormwater drainage system capacities that could occur due to changes in drainage patterns. Local grading regulations and standards, described in Section 3.11.1.3, *Regulatory Setting*, also would be implemented to address erosion, flooding, and drainage system capacities, to prevent adverse impacts due to changes in drainage patterns. Cumulative projects would also be expected to comply with stormwater requirements similar to those set forth in **Mitigation Measure 3.11-1**. Therefore, based on the assumed compulsory compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the relevant geographic area would not cause or contribute to a significant cumulative impact related to criterion c). The Project's cumulative effect would not be cumulatively considerable, and this impact would be less than significant with mitigation incorporated.

Mitigation: Implement Mitigation Measure 3.11-1, Stormwater Pollution Prevention Plan.

Significance after Mitigation: Less than significant.

Criterion d)

As analyzed in Section 3.11.3, *Direct and Indirect Effects*, the Heartland Solar Project site is too far away from the ocean or large water bodies to be affected by tsunamis or seiches. Because it would result in no impact related to these considerations, it would not cause or contribute to any related cumulative impact.

Mitigation: None required.

The Heartland Solar Project would cause an incremental, less-than-significant contribution to cumulative impacts related to flood hazards. The local area has substantial levee works to prevent flooding. In addition, the cumulative projects listed on Table 3.1-1 and shown on Figure 3.1-1 are not within 100-year flood hazard zones. Finally, State and local regulations and standards have been established to require projects to properly contain pollutants and be designed to not cause or be subject to flooding hazards. Therefore, based on the Project's environmental setting and compliance with regulatory requirements, the incremental impacts of the Project, combined with impacts of other projects in the relevant geographic area, would not cause or contribute to a

significant cumulative impact related to flood hazards. The Project's cumulative effect would not be cumulatively considerable, and this impact would be less than significant

Mitigation: None required.

Criterion e)

Impact 3.11-4c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a conflict with or obstruction of the implementation of the basin plan or GSP. (*Less-than-Significant with Mitigation Incorporated*)

The Project would cause an incremental, less-than-significant contribution to cumulative impacts related to conflicts with or obstruction of the implementation of the Basin Plan or GSP. State and local stormwater regulations and standards, described in Section 3.11.1.3, *Regulatory Setting*, have been established to identify and protect beneficial uses of water (i.e., basin plan) and sustainably manage groundwater within the groundwater basins (i.e., GSP). Cumulative projects would be required to quantify their water supply needs and verify that the required volume of water is available. Cumulative projects would also be expected to comply with stormwater requirements similar to those set forth in **Mitigation Measure 3.11-1** to conform to County requirements and avoid conflicts with the Basin Plan. Therefore, based on compliance with these requirements, the incremental impacts of the Project combined with incremental impacts of other projects in the area would not cause or contribute a significant cumulative impact related to criterion e). The Project's cumulative effect would not be cumulatively considerable, and this impact would be less than significant with mitigation.

Mitigation: Implement Mitigation Measure 3.11-1, Stormwater Pollution Prevention Plan.

Significance after Mitigation: Less than significant.

3.11.4.2 Cumulative Effects of the PG&E Components

As described in Section 2.5.2 of Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kV gen-tie line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be conducted on approximately 2 acres within the existing (previously disturbed) Tranquillity Switching Station.

Impact 3.11-5c: The PG&E Components would not cause a cumulatively considerable contribution to cumulative effects on hydrology or water quality. (*Less-than-Significant Impact)*

As discussed under Section 3.11.3.3, *Direct and Indirect Effects of the PG&E Components*, the PG&E Components would result in a less-than-significant impact on hydrology and water

quality. Due to the limited footprint of the PG&E Components, the direct and indirect effects related to hydrology and water quality would not result in incremental effects that would be cumulatively considerable. The incremental effects of the PG&E Components would be controlled by standard protocols and BMPs (PG&E 2025). The cumulative projects identified in Table 3.1-1 and shown on Figure 3.1-1 include other transmission lines and solar facilities, all of which would be required to maintain the sites in accord with legal requirements. For example, the sites would be required to implement spill prevention, safe handling, and storage measures to limit potentially hazardous substances releases during all phases of the projects. Also, as with the Project and the PG&E Components, these projects are located on flat topography, so there is very limited potential for erosion. The PG&E Components would not be near any streams or waterways; therefore, any disturbance associated with PG&E work would not result in violations of surface waters. Therefore, the incremental impacts of the PG&E Components, when combined with the incremental impacts of other projects, would not result in a significant water-related cumulative impact. The cumulative impact of the PG&E Components would be less than significant.

Mitigation: None required.

3.11.5 References

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RWQCB (Regional Water Quality Control Board). 2018. *Water Quality Control Plan for the Tulare Lake Basin*. Revised May 2018.

U.S. Bureau of Reclamation. 2017. *Central Valley Project Municipal and Industrial Water Shortage Policy Guidance and Procedures.* Effective February 1, 2017.

WWD GSA (Westlands Water District Groundwater Sustainability Agency). 2025. *Westside Subbasin Groundwater Sustainability Plan (Clarified and Amended GSP).* Amended December 2024. Adopted January 2025.

3.12 Land Use and Planning

This section identifies and evaluates issues related to land use and planning, including the potential for physical division of an established community and/or a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. It describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). Fresno County (the County) received no scoping comments regarding land use and planning during the Project scoping period (Appendix A, *Scoping Report*).

3.12.1 Setting

3.12.1.1 Study Area

The study area for the analysis of potential impacts to land use and planning consists of the footprint of the Project, including all areas of temporary and/or permanent ground disturbance.

3.12.1.2 Environmental Setting

The Project would be constructed and operated within an approximately 2,362-acre area within the AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) Zone District. The site is located approximately 6 miles southwest of the City of Mendota, 10 miles east of Interstate 5, to the east of S. San Bernardino and Los Angeles avenues, south of W. American Avenue, west of State Route (SR) 33, 0.5 mile north of Manning Avenue, and 1.25 miles north of the Tranquillity Switching Station. It is also located across SR 33 from the existing Adams East Solar facility and immediately north of the Luna Valley Solar facility. Agricultural uses, other solar facilities, and existing public utilities (such as the existing Tranquillity Switching Station) generally surround the Project site.

Irrigated agriculture historically occurred here; however, due to lack of drainage, salt accumulation in the soil, and a legal covenant that precludes irrigation for many of the parcels, the Project site no longer supports irrigated agricultural land uses. In the past 10 years, the Project's proposed solar facility site has been intermittently dry farmed for grain or forage crops or has lain fallow.

None of the parcels that comprise the solar facility site is subject to a Williamson Act contract. The closest Williamson Act-contracted parcels to the Project site are located immediately adjacent to the west of the solar facility site (Conservation Biology Institute 2015; Fresno County 2021).

3.12.1.3 Regulatory Setting

Federal

No federal statutes, regulations, plans, or policies govern land use or planning on the Project site.

State

California Public Utilities Commission General Order No. 131-E

The California Public Utilities Commission (CPUC) would have sole and exclusive jurisdiction over PG&E's construction, operation and maintenance of the PG&E infrastructure and improvements that would be needed to connect the Project to the grid because it regulates activities undertaken by PG&E and the other investor-owned public utilities within the State. PG&E's work (as regulated by the CPUC) is not subject to the County's land use approval requirements. However, CPUC General Order No. 131-E, Section XI.B requires PG&E to "consult with local agencies regarding land use matters."

Local

Fresno County General Plan

The Fresno County General Plan is the County's long-range planning document. It 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 Environmental Justice (Fresno County 2024). An eighth topical element, Housing, was adopted as a separate document (Fresno County 2016). The Agriculture and Land Use Element describes the County's Land Use Diagram and related development standards for unincorporated land within the County. It also sets out goals, policies, and implementation programs for Resource Lands (including agriculture), Rural Development (non-agriculture), Urban Development, and Administration (Fresno County 2024).

The Project site is designated in the Fresno County General Plan for *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. The Project site is not located within the jurisdiction of a community plan, specific plan, or regional plan. The Fresno County General Plan goal and policies relevant to the Project include:

> **Goal LU-A:** To promote the long-term conservation of productive and potentially productive and potentially productive agricultural lands and to accommodate agricultural-support services and agriculturally-related activities that support the viability of agriculture and further the County's economic development goals.
>
> ***Policy LU-A.1: Agricultural Land Conservation.*** 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.3: Special Agricultural Uses.*** 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. 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 (1/4) mile radius;

d. A probable workforce should be located nearby or be readily available.

Policy LU-A.13: Agricultural Buffers. The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations. Additionally, the County shall consider buffers between agricultural uses and proposed sensitive receptors when processing discretionary land use applications.

Policy LU-A.14: Agricultural Land Conversion Review. 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.

Fresno County General Plan implementation programs that are relevant to the Project include:

Implementation Program LU-A.B: During the develop review process, the County shall evaluate and incorporate all practical buffers for new non-agricultural uses proposed in agricultural areas of the county. 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. (RDR/PSP) (See Policy LU-A.13)

Implementation Program LU-A.C: 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. (See Policy LU-A.15)

Fresno County Zoning Code

According to the Fresno County Zoning Map, the Project site is zoned "Exclusive Agricultural, 20-acre minimum parcel size (AE-20)." Fresno County Zoning Code section 816.2.D identifies electrical transmission substations and electric distribution substations as uses permitted subject to Director Review and Approval (Fresno County 2018a). The County processes energy 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, as described in section 853.B.14 of the County Code (Fresno County 2018b). All of the proposed facilities within the County's land use jurisdiction, including the solar facility's proposed substation, are being evaluated pursuant to the CUP process.

Fresno County Solar Guidelines

Fresno County has identified the need to balance the protection of important farmlands and minimize impacts to existing agricultural operations with accommodation of new renewable energy technology. To meet these needs, the County has adopted guidelines and policies intended to be flexible enough to accommodate the evolving technology. The solar facility guidelines adopted by the Fresno County Board of Supervisors in 2013, and revised in 2017, also provide an outline for the process of evaluating solar facilities within the County (Fresno County 2017). Project consistency with the solar facility guidelines is addressed in Appendix I2.

3.12.2 Significance Criteria

The Project would result in significant impacts to land use and planning if it would:

a) Physically divide an established community;

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.

3.12.3 Direct and Indirect Effects

3.12.3.1 Methodology

The location of the Project site relative to established communities and the nature of the proposed use were evaluated, including for consistency with County land use and planning documents and requirements, to determine whether the Project would result in a significant change to existing land use and planning conditions.

3.12.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would physically divide an established community.

As described in Section 3.12.1.2, *Environmental Setting*, the Heartland Solar Project site is located in unincorporated western Fresno County approximately 6 miles southwest of the City of Mendota. Typically, the division of an established community would result from the construction of a physical barrier to neighborhood access or the removal of a means of access. Project elements would not cross through any existing community. The Project site would be surrounded and

secured by fencing; however, because the facility is not proposed within an established community, its boundary fencing would not divide an established community. Accordingly, there would be no impact. (*No Impact*)

Mitigation: None required.

Criterion 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.

The Heartland Solar Project would be consistent with the Fresno County General Plan for the reasons explained in Appendix I1, *Consistency with Fresno County General Plan*. The Project also would be consistent with the County's solar facility guidelines (see Appendix I2). As described in Section 3.12.1.3, *Regulatory Setting*, the County's solar facility guidelines were established to protect important farmlands and minimize the impacts of solar projects on adjacent agricultural operations. To meet these requirements, the Project would, for example, maintain a 50-foot buffer between the solar facility and adjacent agricultural operations and would implement a reclamation plan to return the site to prior agricultural use after Project decommissioning. A preliminary draft reclamation plan is provided in Appendix B2. As discussed in Section 3.3, *Agriculture and Forestry Resources*, the Project would not conflict with the AE-20 zoning designation of the solar facility site, as the proposed uses may be allowed by discretionary approval of a CUP on agricultural land in conformance with Fresno County Zoning Code section 853(B). Additionally, the Project site is not located on lands subject to a Williamson Act contract. Because the Project would be consistent with the Fresno County General Plan, zoning, and solar facility guidelines, there would be no impact relative to this criterion b). (*No Impact*)

Mitigation: None required.

3.12.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

The proposed PG&E gen-tie line would be within existing roadways and would not divide an established community. As discussed, the proposed upgrades at the Tranquillity Switching Station would occur within the existing switching station footprint. Therefore, there would be no direct or indirect effects that would divide an established community. As discussed in the regulatory setting, PG&E is an investor-owned public utility. The PG&E Components would be under the design and siting jurisdiction of the CPUC. Accordingly, this work is not subject to the

County's discretionary land use approval requirements. However, CPUC General Order No. 131-E, Section XI.B requires PG&E to "consult with local agencies regarding land use matters." PG&E may require a local ministerial permit to secure easements or construct the components and, if so, the County anticipates that local consultation would occur as part of the permit process. Because the proposed PG&E Components would not conflict with zoning or any local land use plans, the PG&E Components would have **no impact** associated with land use conflicts.

Mitigation: None required.

3.12.4 Cumulative Effects Analysis

Because the Heartland Solar Project and PG&E Components would have no impact to either of the Land Use and Planning considerations, the Project could not cause or contribute to any cumulative effect in this regard. (*No Impact*)

Mitigation: None required.

3.12.5 References

Conservation Biology Institute. 2015. Fresno County Williamson Act Parcels, California, 2015.

Fresno County. 2016. *Fresno Multi-Jurisdictional 2015–2023 Housing Element A Regional Plan for Addressing Housing Needs.* Adopted April 2016.

Fresno County. 2017. *County of Fresno Solar Facility Guidelines*. Revised by Board of Supervisors on December 12, 2017.

Fresno County. 2018a. Fresno County Zoning Ordinance—Section 816, "AE" Exclusive Agriculture District.

Fresno County. 2018b. Fresno County Zoning Ordinance—Section 853, Uses Permitted Subject to Conditional Use Permit.

Fresno County. 2021. Parcel Map Lookup, Assessor's Map Page Lookup Roll Year 2021.

Fresno County. 2024. *General Plan Policy Document, Comprehensive General Plan Review and Revision.* Final. February 2024.

3.13 Mineral Resources

This section identifies and evaluates issues related to mineral resources, including potential losses in the availability of a known mineral resource that would be of value to the region and the residents of the state or a locally-important mineral resource recovery site. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). Fresno County (the County) did not receive any scoping comments pertaining to mineral resources (Appendix A, *Scoping Report*).

3.13.1 Setting

3.13.1.1 Study Area

The study area for the analysis of potential impacts to mineral resources is defined as the Project footprint, including all areas of temporary and/or permanent ground disturbance.

3.13.1.2 Environmental Setting

Geologic Environment

As described more fully in Section 3.8*, Geology, Soils, and Paleontological Resources*, the Project site is located on sedimentary deposits of the Great Valley geomorphic province. Surface geology at the site consists of Holocene-age alluvial deposits. The thickness of the surficial Holocene alluvium varies across the San Joaquin Basin but is expected to be approximately 15 feet or greater at the facility locations that comprise the Project site.

Fresno County contains aggregate resources and high value commodities such as granite and marble, oil, coal, and gold, silver, copper, mercury, tungsten, chromium, and asbestos. Aggregate resources and chromium are the two most plentiful mineral resources (Fresno County 2017).

Mineral Resources Potential

The Mineral Resources Data System (MRDS), administered by the U.S. Geological Survey (USGS), provides data to describe metallic and nonmetallic mineral resources, including deposit name, location, commodity, deposit description, production status and references. To confirm the presence/absence of existing surface mines, closed mines, occurrences/prospects, and unknown/ undefined mineral resources within the study area, the preparers of this EIR reviewed the MRDS online database (USGS 2023). No mineral resources or operations are located within the Project site boundary.

Based on the geologic setting, the only mineral resources with the potential to occur near the Project site are aggregate resources. Alluvial geologic units in the region are potential sources of sand and gravel that could have value as a mineral resource commodity. Because sand and gravel are low-value, high-volume resources, the economic value and feasibility of developing them is predicated on the existence of high local demand from the construction industry. The closest

active producer of sand and gravel, the San Joaquin River Pit, is identified in the MRDS online database as being located on the San Joaquin River about 4 miles east of the Mendota Wastewater Treatment Plant (USGS 2023). The site is owned by Edward Petry. The next closest producer, the Mendota Plant, is approximately 3 miles south of the Mendota Wastewater Treatment Plant in the center of the City of Mendota – it produces calcium and is owned by Spreckels Sugar Division, Amstar Corp. Both producers are graded D, and only have summary information about the resource, which does not include the activity status of the producers.

Based on the geological environment and historical trends, the potential for occurrence of locatable minerals is low within the surrounding area. According to review of the MRDS online database, metallic resources and occurrences (such as mercury, gold, copper, and chromium) are restricted to the Coast Ranges to the west and the Sierra Foothills to the east (USGS 2023). Numerous land sections within the mountainous areas have active mining claims. However, none of these resources occurs within 30 miles of the Project site and they are unlikely to be found within the geologic units that underlie the Project site or surrounding areas.

The California Geologic Energy Management Division (CalGEM) indicates that there was an exploratory boring drilled in 1950 just south of the Project site but that it was plugged and abandoned that same year (see *Phase I Environmental Site Assessment* [Appendix H]). There are no other known oil or gas wells located within or near the Project site.

Sand and gravel deposits are ubiquitous throughout the Quaternary geologic areas of deposition near the Project site and throughout the region (USGS 2023; California Division of Mines and Geology [CDMG] 1999). There are several producers of sand and gravel approximately 10 miles west of the Project site, and many more within the Fresno Production-Consumption Region approximately 30 miles to the east (USGS 2023). None of the past or current locations of sand and gravel production intersects the Project site. The Project site is not located on land designated for mineral resources by the Fresno County General Plan (Fresno County 2024).

Mineral Land Classification under the Surface Mining and Reclamation Act

The State Surface Mining and Reclamation Act of 1975 (SMARA), as amended, mandated the development of mineral land classifications to help identify and protect mineral resources in areas within the state that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction. After classification of mineral resource areas, SMARA provided for the designation of lands containing mineral deposits of regional or statewide significance. In addition, SMARA was designed to provide guidelines for the proper reclamation of mineral lands. In compliance with SMARA, the State Mining and Geology Board established Mineral Resources Zones (MRZs) to classify lands that contain mineral deposits. According to maps of MRZs within Fresno County, the Project site is not located within an MRZ (Fresno County 2017; CGS 2022).

3.13.1.3 Regulatory Setting

Federal

No federal regulations related to mineral resources are applicable to the Project.

State

State Surface Mining and Reclamation Act of 1975

SMARA (Public Resources Code § 2710 et seq.) mandated the initiation by the State Geologist of mineral land classification to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the State Mining and Geology Board to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System (CDMG 1999). The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or regional significance are available when needed.

California Geologic Energy Management Division

All California oil and gas wells on state and private lands are permitted, drilled, operated, maintained, plugged, and abandoned under requirements and procedures administered by CalGEM, which was formerly referred to as the Division of Oil, Gas and Geothermal Resources. CalGEM's regulatory program promotes sound engineering practices, prevention of pollution, and implementation of public safety programs. To implement this regulatory program, CalGEM requires avoidance of building over or near plugged or abandoned oil and gas wells, or requires the remediation of wells to current CalGEM standards.

Local

Fresno County 2024 General Plan

The Fresno County General Plan Open Space and Conservation Element includes goals and policies intended to preserve the future availability of mineral resources in the County and to promote the orderly extraction of mineral resources in the County while minimizing the impact of these activities on surrounding land uses and the natural environment (Fresno County 2024). Relevant policies from this planning document include:

> **Goal OS-C:** To conserve areas identified as containing significant mineral deposits and oil and gas resources for potential future use, while promoting the reasonable, safe, and orderly operation of mining and extraction activities within areas designated for such use, where environmental, aesthetic, and adjacent land use compatibility impacts can be adequately mitigated.
>
> > ***Policy OS-C.1: Incompatible Mining Uses.*** The County shall not permit incompatible land uses within the impact area of existing or potential surface mining areas.
> >
> > ***Policy OS-C.10: Mineral Resource Lands Protection.*** The County shall not permit land uses that threaten the future availability of mineral resource or preclude future extraction of those resources.
> >
> > ***Policy OS-C.12: New Development Compatibility.*** The County shall ensure that new discretionary land use developments are compatible with existing and potential surface mining areas and operations as identified on the Mineral Resource Zone Maps prepared by the State Division of Mines and Geology and other mineral resource areas identified by the County.

3.13.2 Significance Criteria

The Project would result in significant impacts to mineral resources if it would:

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.

3.13.3 Direct and Indirect Effects

3.13.3.1 Methodology

This analysis evaluates potential impacts to mineral resources by identifying whether known mineral resources of statewide, regional, or local importance occur within the Project site and, if so, assesses the extent to which the Project would result in the loss of availability of these resources.

3.13.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

The Heartland Solar Project site is not located on lands classified as an MRZ by the State and is not zoned for or immediately adjacent to lands designated as a mineral resource zone by the Fresno County General Plan. Additionally, there are no active mining claims within 2.5 miles of the Project site and no active oil or gas fields located closer than approximately 25 miles from the Project site. As a result, the Heartland Solar Project would not interfere with nearby mineral extraction operations and would not result in the loss of land designated for mineral resources. Based on the absence of historical surface mining in the area, the potential for surface mining at the site is considered low. As such, the Project would not result in the loss of availability of a known mineral resource and no impact related to this criterion would result. *(No Impact)*

Mitigation: None required.

Criterion b) Whether the Project would result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

The Heartland Solar Project site is not located on land designated for mineral resources by the Fresno County General Plan. Implementation of the Project would result in no impact related to the loss of a locally important mineral resource recovery site. *(No Impact)*

Mitigation: None required.

3.13.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

The PG&E Components are proposed within roadways and in an existing developed electrical switching station and would not be located in an identified mineral resources zone, nor would they result in any loss of a locally-important mineral resource recovery site delineated on any local land use plan or the Fresno County General Plan. Therefore, the PG&E Components would have **no impact** related to mineral resources.

Mitigation: None required.

3.13.4 Cumulative Effects Analysis

As analyzed in Section 3.13.3, *Direct and Indirect Effects*, the Heartland Solar Project and PG&E Components would result in no impact to mineral resources. Therefore, the Project could not cause or contribute to any cumulative impact to such resources. (*No Impact*)

Mitigation: None required.

3.13.5 References

CDMG (California Division of Mines and Geology). 1999. *California Surface Mining and Reclamation Policies and Procedures, Guidelines for Classification and Designation of Mineral Lands*.

CGS (California Geological Survey). 2022. *CGS Information Warehouse: Mineral Land Classification*. *Mendota Area.*

Fresno County. 2017. *General Plan Background Report, Public Review Draft*. December 2017.

Fresno County. 2024. *Fresno County General Plan, Comprehensive General Plan Review and Revision.* Final. February 2024.

USGS (U.S. Geological Survey). 2023. *Mineral Resources Data System: U.S. Geological Survey*.

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3.14 Noise and Acoustics

This section evaluates issues related to noise and acoustics, including changes in ambient sound levels and groundborne vibration or groundborne noise levels. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project).

This analysis is based in part on the Project-specific operational noise prediction technical study (Appendix J, *Operational Noise Prediction Technical Memorandum*). The technical study in Appendix J includes an analysis of the proposed solar energy generation and energy storage facility (solar facility). The preparers of this Draft EIR independently reviewed the study and determined it to be suitable for reliance, in combination with other materials included in the formal record, in the preparation of this Draft EIR. The County did not receive any scoping comments pertaining to noise and acoustics during the scoping period (see Appendix A, *Scoping Report*).

3.14.1 Setting

3.14.1.1 Study Area

The study area for evaluation of noise and vibration impacts from construction encompasses the Project site and the nearest potentially affected sensitive receptors. Applying a perimeter extension of 1 mile in all directions around the Project site conservatively captures areas of potential impact taking into account attenuation with distance. Beyond this distance, all construction noise impacts would be less than significant. Because operational sources would generate lower noise level than construction, this study area perimeter is sufficient to address operational noise as well.

3.14.1.2 Environmental Setting

Noise and Acoustics Background

Sound is mechanical energy transmitted by pressure waves through a medium such as air. *Acoustics* is the field of science that deals with the production, propagation, reception, effects, and control of sound. *Noise* can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation (or the speed by which the wavefront of the soundwave passes through a medium), and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the

audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. Consequently, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). See **Figure 3.14-1** for examples.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of the noise experienced by the individual over a specified period of time. A noise level is a measure of noise for a given period of time. However, noise levels rarely persist consistently over a long period of time. In fact, community noise varies continuously with time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. Background noise levels change throughout a typical day, but do so gradually, corresponding with the addition and subtraction of distant noise sources and atmospheric conditions. The addition of short duration single event noise sources (e.g., aircraft flyovers, horns, sirens) makes community noise constantly variable throughout a day.

These successive additions of sound to the community noise environment vary the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. Noise descriptors discussed in this analysis are summarized below:

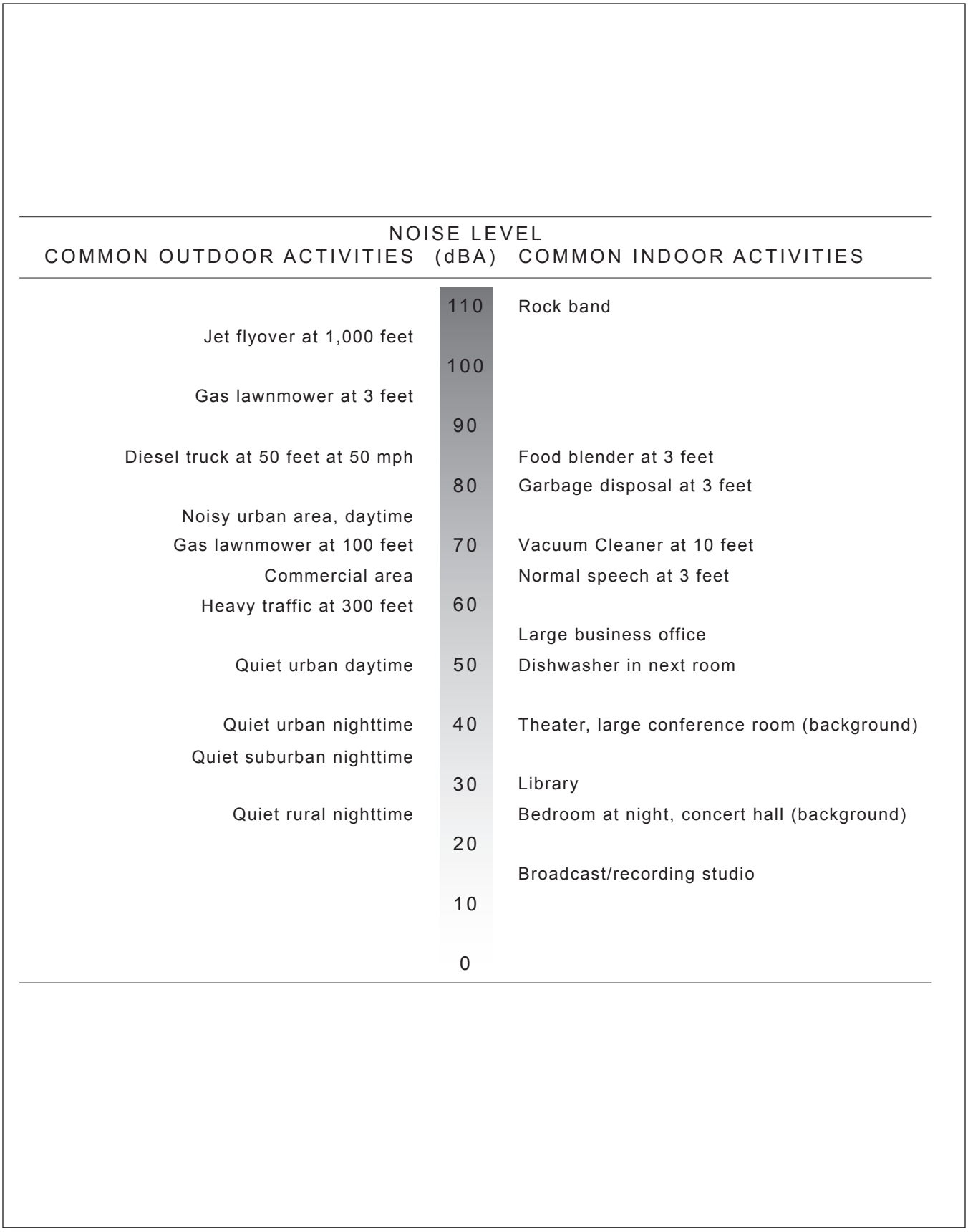
L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

DNL: The Day-night Noise Level (DNL; also referred to as L_{dn}) or the energy average of the A-weighted sound levels occurring during a 24-hour period and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: Similar to the DNL, the Community Noise Equivalent Level (CNEL) adds a 5-dBA penalty for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to the 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

L_x: The sound level that is equaled or exceeded x percent of a specified time period. The L_{50} represents the median sound level (i.e., the noise level exceeded 50 percent of the time, or 30 minutes out of an hour).

L_{max}: The instantaneous maximum noise level measured during the measurement period of interest.



SOURCE: Caltrans, 2013

Heartland Solar Project

Figure 3.14-1
Typical A-Weighted Sound Levels

ESA

Effects of Noise on People

There is no universally accepted way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way the new noise compares to the existing noise levels to which one has adapted: the so-called *ambient noise* level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged by those hearing it. Regarding increases in A-weighted- noise level, the following relationships occur (Caltrans 2013):

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a barely-perceivable difference when the change in noise is perceived but does not cause a human response (such as annoyance or nuisance);
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause an adverse response (such as hearing damage or psychological effects).

These relationships occur in part because of the logarithmic nature of sound and the decibel system. For example, a ruler is a linear scale: it has marks on it corresponding to equal quantities of distance. One way of expressing this is to say that the ratio of successive intervals is equal to one. A logarithmic scale is different in that the ratio of successive intervals is not equal to one. Each interval on a logarithmic scale is some common factor larger than the previous interval. A typical ratio is 10, so that the marks on the scale read: 1, 10, 100, 1,000, 10,000, etc., doubling the variable plotted on the x-axis. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Sound level naturally decreases with more distance from the source. This basic attenuation rate is referred to as the *geometric spreading loss*. The basic rate of geometric spreading loss depends on whether a given noise source can be characterized as a point source or a line source. Point sources of noise, including stationary mobile sources such as idling vehicles or on-site construction equipment, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source. In many cases, noise attenuation from a point source increases by 1.5 dBA from 6.0 dBA for a total attenuation rate of 7.5 dBA for each doubling of distance due to ground absorption and reflective wave canceling. These factors are collectively referred to as *excess ground attenuation*. The basic geometric spreading loss rate is used where the ground surface between a noise source and a receptor is reflective, such as parking lots or a smooth body of water. The excess ground attenuation rate (7.5 dBA per doubling of distance) is used where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees.

Widely distributed noises such as a street with moving vehicles (a *line source*) typically would attenuate at a lower rate of approximately 3.0 dBA for each doubling of distance between the source and the receptor. If the ground surface between source and receptor is absorptive rather than reflective, the nominal rate increases by 1.5 dBA to 4.5 dBA for each doubling of distance. Atmospheric effects, such as wind and temperature gradients, can also influence noise attenuation rates from both line and point sources of noise. However, unlike ground attenuation, atmospheric effects are constantly changing and difficult to predict. In general, the greater the distance the receptor is from the source, the greater the potential for variation in sound levels due to atmospheric effects.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. Although PPV is appropriate for evaluating building damage, it is less suitable for evaluating human response. Human response is better related to the average vibration amplitude. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to express RMS. The decibel notation acts to compress the range of numbers required to describe vibration, as numbers can differ over several orders of magnitude. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration (Federal Transit Administration [FTA] 2018).

Sensitive Receptors

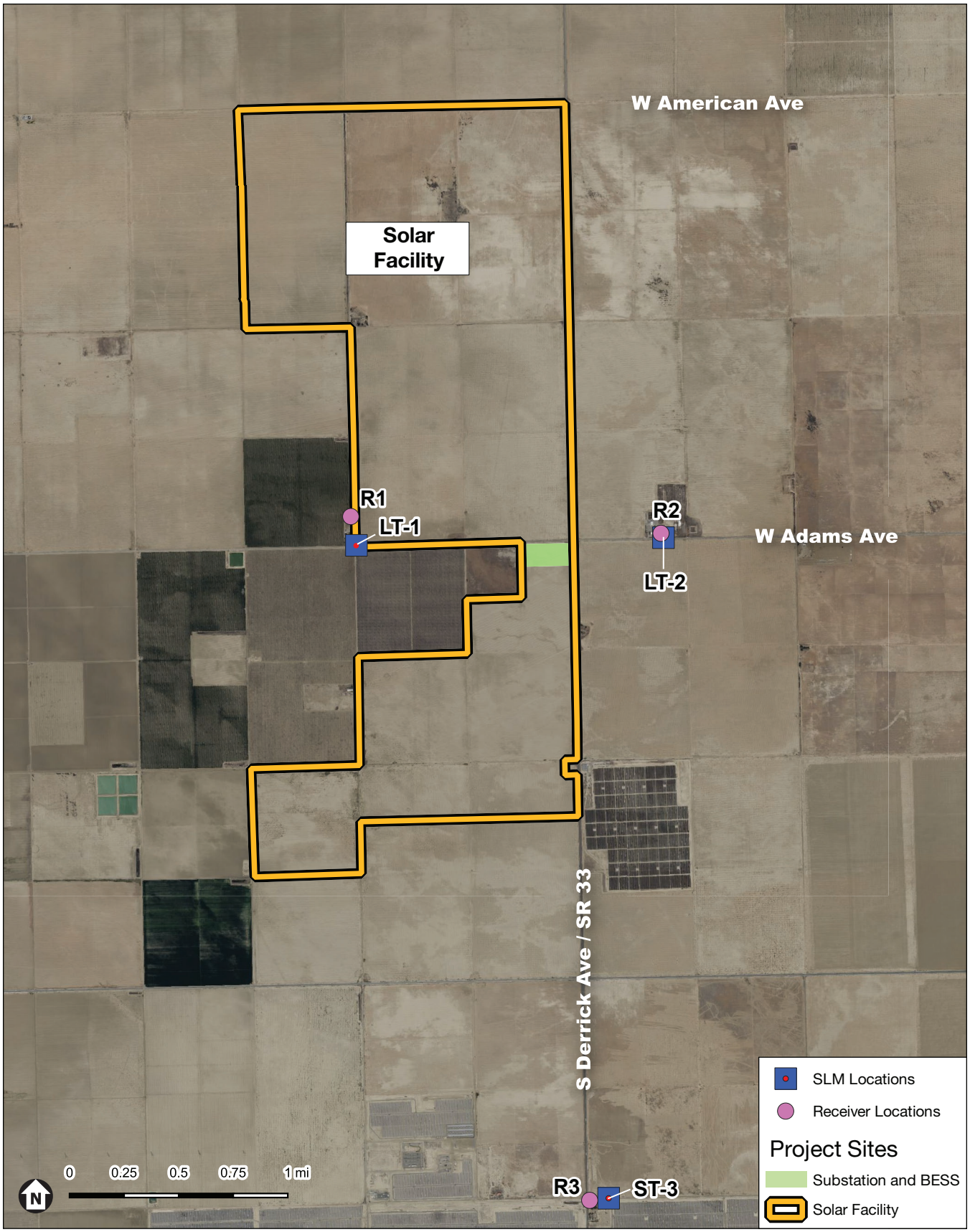
Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate also are sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive.

The locations and distance to the nearest Project-related source or Project site boundary are the three residences identified in **Table 3.14-1** and shown in **Figure 3.14-2**.

TABLE 3.14-1
NOISE SENSITIVE RECEPTOR LOCATIONS

Receptor Location[a]	Type	Approximate Distance to and Direction from the Project Boundary
R1	Residence	80 feet west
R2	Residence	2,000 feet east
R3	Residence	9,300 feet south

NOTE:
a. Receptor locations correspond to those illustrated in Figure 3.14-2.



SOURCE: ESA, 2025; Basemap from Bing Maps, 2022

Heartland Solar Project

Figure 3.14-2
Sound Level Measurement (SLM) and Sensitive Receptor Location
Fresno County, California

ESA

Noise Sources and Ambient Noise Levels

The Project site is in an area of relatively flat agricultural land with scattered rural residences. The main contributor to the existing noise environment in the vicinity is traffic along State Route 33. Additional noise sources include local roadways, natural sources such as birds, insects, and wind, and human-made noise sources including aircraft overflights, irrigation pumps, and farming equipment.

To provide the basis for evaluating potential impacts of the Project on these nearest receptors, long-term and short-term noise measurements were conducted by Dudek on Tuesday, August 19, and Wednesday, August 20, 2025, and a short-term noise measurement was conducted on Tuesday, May 28, 2020, by Tetra Tech to document existing ambient noise levels during typical daytime and nighttime hours in the vicinity of the Project site (Appendix J and ESA 2021). The long-term measurements include a more complete data set than the short-term measurements collected at the same general locations; therefore, the long-term measurements are used in this analysis to characterize the ambient conditions in the vicinity of R1 and R2.The noise measurements were collected immediately adjacent (within 25 feet) to West Adams Boulevard and, as a result, the measured L_{eq} levels may not be representative of noise levels at sensitive receptor locations R1 and R2, which are setback 680 feet and 135 feet from the roadway, respectively. Therefore, since traffic on West Adams Avenue is assumed to be the primary existing noise source in the area, attenuated ambient L_{eq} noise levels at R1 and R2 were estimated to account for their greater setback distance from the roadway. The L_{50} levels measured at LT-1 and LT-2 adjacent to West Adams Boulevard may also be used to characterize noise levels at R1 and R2, respectively, because the median sound level does not include the loudest noise levels, such as those from passing vehicles, that are attenuated at R1 and R2 due to distance.

The noise monitoring and receptor locations are illustrated in Figure 3.14-2. As shown in **Table 3.14-2**, the results of the noise measurements indicate that current daytime ambient noise levels on and immediately adjacent to the Project site range from approximately 48 dBA L_{eq} to 57 dBA L_{eq}, depending on the distance setback from the roadway, and that the current daytime ambient noise levels along West Adams Avenue range from 35 dBA L_{50} to 43 dBA L_{50}

TABLE 3.14-2
EXISTING NOISE LEVELS (DBA)

Location	Duration	Daytime dBA L_{eq}[a]	Nighttime dBA L_{eq}[a]	Daytime dBA L_{50}	Nighttime dBA L_{50}	Primary Noise Sources
LT-1	1 hour	57	55	35.0	34.2	Traffic on West Adams Avenue
R1[b]	1 hour	43	41	NA	NA	Traffic on West Adams Avenue
LT-2	1 hour	55	47	43.0	42.0	Traffic on West Adams Avenue
R2[c]	1 hour	48	40	NA	NA	Traffic on West Adams Avenue
ST-3 and R3	30 minutes	34	NA	NA	NA	Traffic on State Route 33

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level; L_{50} = the median sound level (i.e., the noise level exceeded 50 percent of the time, or 30 minutes out of an hour); NA = not applicable

a. Daytime 1-hour Leq and L50 levels represent the lowest measured 1-hour Leq and L50 during the period from 7:00 a.m. to 10:00 p.m. Nighttime 1-hour Leq and L50 levels represent the lowest measured 1-hour Leq and L50 during the period from 10:00 p.m. to 7:00 a.m.

b. 1-hour L_{eq} noise levels shown for R1 are estimated based on noise levels measured at LT-1. It is assumed that the primary noise source at LT-1 is traffic along South Ohio Avenue and West Adams Avenue, which is centered approximately 25 feet from

Location	Duration	Daytime dBA L_{eq}[a]	Nighttime dBA L_{eq}[a]	Daytime dBA L_{50}	Nighttime dBA L_{50}	Primary Noise Sources

measurement locations and sensitive receptor location R1 is approximately 680 feet from the center of West Adams Avenue. These distances were used with the basic ground attenuation rate for line sources (3 dBA per doubling of distance) to estimate the attenuated traffic noise levels at R1.

c. 1-hour L_{eq} noise levels shown for R2 are estimated based on noise levels measured at LT-2. It is assumed that the primary noise source at LT-2 is traffic along South Derrick Avenue and West Adams Avenue which is centered approximately 25 feet from the measurement locations and the sensitive receptor location R2 is approximately 135 feet from the center of West Adams Avenue. These distances were used with the basic ground attenuation rate for line sources (3 dBA per doubling of distance) to estimate the attenuated noise levels at R2.

SOURCES: Noise levels at LT-1 and LT-2 were measured by Dudek (see Appendix J, 2025); the noise level at ST-3 and R3 were measured by Tetra Tech (ESA 2021); and noise levels at R1 and R2 are estimated by ESA (2025a).

3.14.1.3 Regulatory Setting

Federal

Federal Transit Administration Construction Noise Criteria

No federal construction noise standards directly apply to the Project. As discussed in the *Local* section below, there are also no quantitative local daytime standards applicable to Project-related construction noise because daytime construction activities are exempt from the Fresno County Noise Ordinance standards. Therefore, while the Project would not be subject to Federal Transit Administration (FTA) oversight, guidance published by the agency nonetheless provides construction noise criteria that are useful in establishing noise-related impact thresholds. The widely referenced FTA Transit Noise and Vibration Impact Assessment Manual (FTA 2018) provides criteria for the detailed analysis of construction noise. These FTA criteria are summarized in **Table 3.14-3**, *Federal Transit Administration Detailed Assessment Criteria for Construction Noise*. Although the Project would not be subject to FTA oversight, these criteria are used for the purposes of this analysis, in the absence of other applicable regulatory thresholds.

TABLE 3.14-3
FEDERAL TRANSIT ADMINISTRATION DETAILED ASSESSMENT CRITERIA FOR CONSTRUCTION NOISE

	L_{eq} (8-hour) (dBA)	
Land Use	**Day**	**Night**
Residential	80	70
Commercial	85	85
Industrial	90	90

SOURCE: FTA 2018

Federal Transit Administration and Federal Railroad Administration Standards

Although the FTA standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in the FTA (2006) Transit Noise and Vibration Impact Assessment Manual routinely are used for projects under review by local jurisdictions that have not adopted their own vibration impact standards. The FTA and Federal Railroad Administration have published guidelines for assessing the impacts of groundborne vibration associated with rail projects, which have been applied by other jurisdictions to other types of projects. The FTA's threshold of architectural damage for conventional sensitive structures from groundborne vibration is measured as 0.2 inches/second PPV or 94 VdB (decibel units of 1micro –inch/second). The FTA

measure of human annoyance at residential uses is 80 VdB for *frequent events*, which are defined as more than 70 vibration events of the same kind per day.

Occupational Safety and Health Act

Under the Occupational Safety and Health Act of 1970 (29 United States Code section 651 et seq.), the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) adopted regulations (29 Code of Federal Regulations section 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list limits on noise exposure levels as a function of the amount of time during which the worker is exposed, as shown in **Table 3.14-4**. The regulations further specify requirements for a hearing conservation program (section 1910.95[c]), a monitoring program (section 1910.95[d]), an audiometric testing program (section 1910.95[g]), and hearing protection (section 1910.95[i]). There are no federal laws governing community noise.

TABLE 3.14-4
OSHA-PERMISSIBLE NOISE EXPOSURE STANDARDS

Duration of Noise (hours/day)	A-Weighted Noise Level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

SOURCE: USEPA 1974. 29 Code of Federal Regulations section 1910.95, Table G-16.

Although no federal noise regulations exist, the U.S. Environmental Protection Agency (USEPA) has published noise guidelines (USEPA 1974). The USEPA guideline recommends a DNL of 55 dBA to protect the public from the effect of broadband environmental noise outdoors in residential areas and farms, and other outdoor areas where people spend widely varying amounts of time, and other places in which quiet is a basis for use (USEPA 1974).

State

Government Code section 65302 encourages counties to implement a noise element as part of the general plan. In addition, the California Governor's Office of Land Use and Climate Innovation (formerly known as the Office of Planning and Research) has developed guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The California Occupational Safety and Health Administration (Cal/OSHA) has published Occupational Noise Exposure Regulations (9 California Code of Regulations sections 5095-5099)

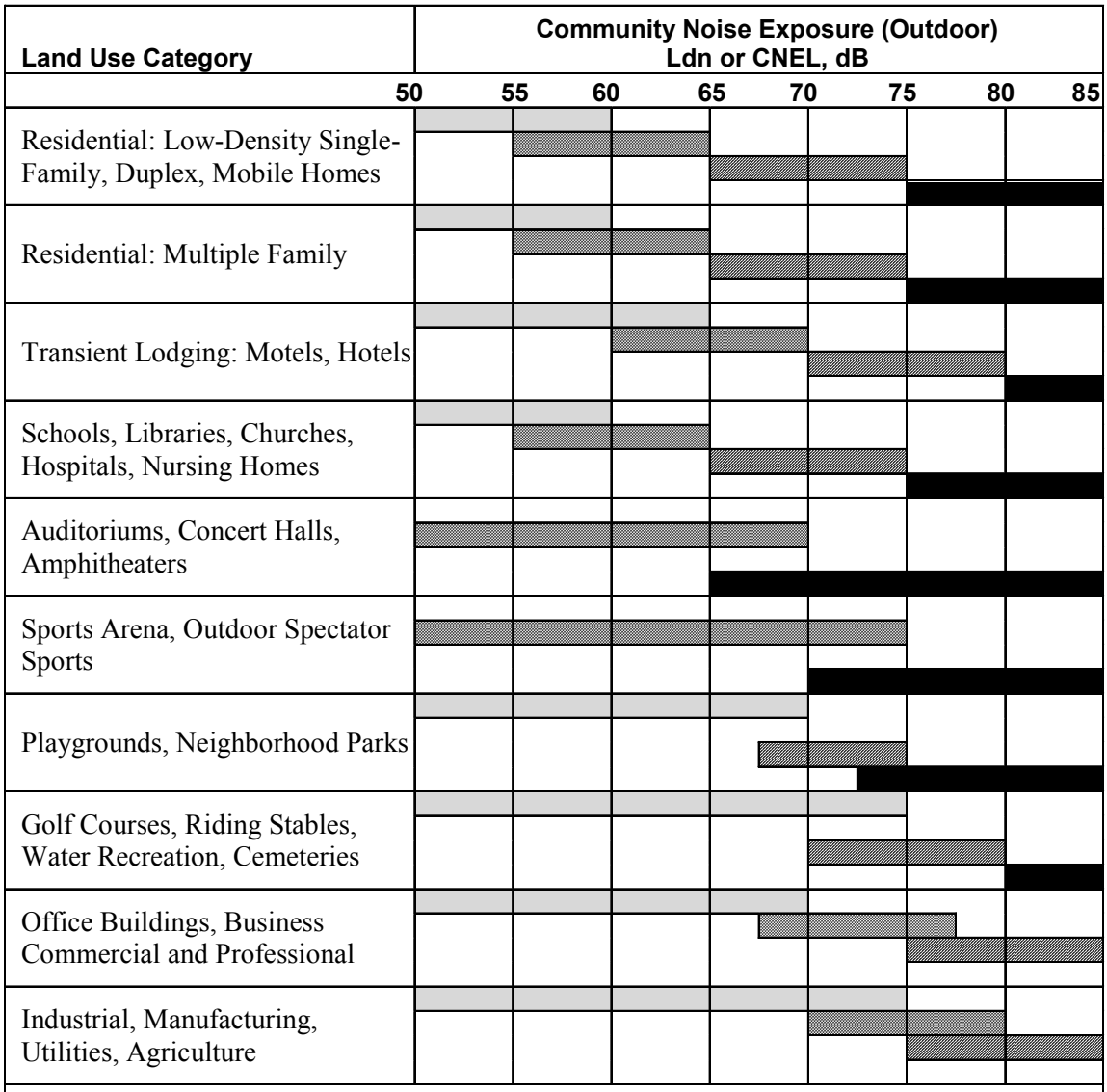
that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards described above.

Local

Fresno County General Plan Health and Safety Element

The Fresno County General Plan Health and Safety Element establishes Countywide land use compatibility guidelines that are applicable to the Project. For example, the maximum allowable noise exposure level for residential land use is 60 dBA CNEL (Fresno County 2024). The following Fresno County General Plan policies also are relevant to the Project:

> ***Policy HS-H.1: Minimize Noise Impacts.*** The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.
>
> ***Policy HS-H.4: Noise Mitigation Design and Acoustical Analysis.*** 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 the Figure HS-9: "Land Use Compatibility for Community Noise Environments"
>
> 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-H.5: Noise Mitigation Measures.*** 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-H.6: Construction-related Noise.*** The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.
>
> ***Policy HS-H.8: Noise Levels Compatibility.*** The County shall evaluate the compatibility of proposed projects with existing and future noise levels through a comparison to Chart HS-1, "Land Use Compatibility for Community Noise Environments."
>
> County General Plan Chart HS-1 is reproduced in this Draft EIR as **Figure 3.14-3**, *Community Noise Environments*.



SOURCE: Fresno County 2000 General Plan

Heartland Solar Project

Figure 3.14-3
Community Noise Environments

Policy HS-H.10: Construction Vibration Control Measures: The following measures to minimize exposure to construction vibration shall be included as standard conditions of approval for projects involving construction vibration within 50 feet of historic buildings or nearby sensitive receivers shall:

a. Avoid the use of vibratory rollers within 50 feet of historic buildings or residential buildings with plastered walls that are susceptible to damage from vibration; and

b. Schedule construction activities with the highest potential to produce vibration to hours with the least potential to affect nearby institutional, educational, and office uses that are identified as sensitive to daytime vibration by the Federal Transit Administration in Noise and Vibration Impact Assessment (FTA 2018).

Fresno County Noise Ordinance

The Fresno County Noise Ordinance (Chapter 8.40 of the Fresno County Development Code) applies to noise sources that can be regulated by Fresno County, such as equipment related to commercial and industrial land uses. **Table 3.14-5** summarizes the County's exterior noise standards that would be applicable to the Project. As indicated in the table, it would be unlawful for Project-related on-site operation and/or maintenance noise levels to exceed an L_{50} of 50 dBA during daytime hours at the nearby residences.

TABLE 3.14-5
FRESNO COUNTY EXTERIOR NOISE LEVEL STANDARDS

Cumulative min/hr (L_x)	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
30 (L_{50})	50	45
15 (L_{25})	55	50
5 ($L_{8.3}$)	60	55
1 ($L_{1.7}$)	65	60
0 (L_{max})	70	65

NOTES: L_x = sound level equaled or exceeded x percent of a specified time period; L_{max} = instantaneous maximum noise level
In the event 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.
SOURCE: Fresno County 1978.

As indicated in section 8.40.060 of the Fresno County Noise Ordinance, noise sources associated with construction activities are exempt from the standards provided they take place after 6:00 a.m. and before 9:00 p.m. on Monday through Friday, or after 7:00 a.m. and before 5:00 p.m. on weekends. In addition to the exterior noise standards, the Noise Ordinance identifies a noise level limit of 50 dBA for electrical substations when measured 50 feet from an affected residence (Fresno County 1978). Chapter 8.40.060(g) of the Fresno County Noise Ordinance further provides that noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities are also exempt.

With respect to operational noise from electrical substations, Fresno County Noise Ordinance section 8.40.90 (Electrical Substations) provides that noise sources associated with the operation of electrical substations shall not exceed 50 dBA when measured as provided in section 8.40.030 (Noise Measurement Criteria). These criteria require that measurements shall be made with a

calibrated sound level meter using the "A" weighting using a slow meter response. The exterior noise levels shall be measured within 50 feet of the affected noise sensitive receptor with the microphone positioned 3- to 5-feet above the ground surface.

3.14.2 Significance Criteria

The Project would result in a significant impact to noise if it would:

a) Generate 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) Generate excessive groundborne vibration or groundborne noise levels; or

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 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

3.14.3 Direct and Indirect Effects

3.14.3.1 Methodology

This analysis evaluates potential noise and vibration impacts of the Project based on review of sensitive receptors, ambient noise levels, and projected noise levels that would be associated with construction, operation, maintenance, and decommissioning of the Project. Impact discussions are based, in part, on the modeled noise and vibration levels of the Project as presented in Appendix J.

Short-Term Construction and Decommissioning Impacts

Short-term noise level increases from construction and decommissioning activities would cause significant impacts if the activities would conflict with local policies or standards. Project-related construction activities taking place between 6:00 a.m. and 9:00 p.m. Monday through Friday and between 7:00 a.m. and 5:00 p.m. on weekends would be exempt from standards in the Fresno County Noise Ordinance. However, absent an adopted County-wide threshold of significance that addresses daytime construction noise, the County has determined that the FTA's daytime construction noise level of 80 dBA is adequate to gauge whether Project daytime noise levels would result in a significant impact at sensitive receptor locations. During nighttime hours, construction would be required to adhere to the Fresno County exterior noise standards: 45 L_{eq} during the nighttime.

Long-Term Operation and Maintenance Impacts

Long-term operation and maintenance noise impacts within Fresno County would be considered significant if Project-related noise would exceed the Fresno County exterior noise standards of 45 dBA L_{50} during nighttime hours (i.e., 10:00 p.m. to 7:00 a.m.) or 50 dBA L_{50} during daytime hours (i.e., 7:00 a.m. to 10:00 p.m.). For most common noise sources, L_{50} can be interpreted as close to the L_{eq} metric. Therefore, if a project would generate noise levels in excess of 50 dBA L_{eq}

during the daytime or 45 L_{eq} during the nighttime, then such noise generation would constitute a significant noise impact.

The Fresno County General Plan CNEL-based community noise exposure level considers the contributions of daytime and nighttime noise levels. The maximum allowable noise exposure level for residential land uses is 60 CNEL.

As described in Section 3.14.1, *Setting*, a change in noise of at least 5 dBA is required before a readily perceptible human response would be expected. In addition, pursuant to its evaluation of the potential significance of solar project noise, the California Energy Commission (CEC) determined that less-than-significant noise impacts would result if daytime noise levels would increase by no more than 10 dBA and nighttime noise levels would increase by no more than 5 dBA over ambient conditions (CEC 2010). Therefore, absent an adopted County-wide threshold of significance that addresses the increase over existing ambient conditions, the County has determined that increases in ambient noise levels associated with long-term operation and maintenance activities for the Project would result in a significant impact if ambient noise levels at sensitive receptor locations would be increased by no more than 10 dBA during daytime hours or by no more than 5 dBA at night.

Vibration Impacts

The County has not identified a numerical threshold to identify the point at which a vibration impact occurs. Therefore, this analysis assumes that the Project would result in a significant construction vibration impact if buildings or sensitive individuals would be exposed to vibration levels equivalent to or higher than FTA PPV vibration threshold level of 0.2 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures from groundborne vibration is 0.2 in/sec PPV. The FTA measure of human annoyance at residential uses is 72 VdB for frequent events, which exceed 70 vibration events of the same source per day (FTA 2018). The FTA impact assessment procedures and criteria are routinely used for projects under review by local jurisdictions that have not adopted their own vibration impact standards.

3.14.3.2 Direct and Indirect Effects of the Project

Criterion a) Whether the Project would generate 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 3.14-1: Construction and decommissioning of the Heartland Solar Project during nighttime hours could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance. (*Less than Significant with Mitigation Incorporated*)

The Fresno County Noise Ordinance states that 50 dBA is the standard for daytime (7:00 a.m. to 10:00 p.m.) and 45 dBA is the standard for nighttime (10:00 p.m. to 7:00 a.m.). Therefore, if a proposed project would generate noise levels from non-construction noise sources in excess of

50 dBA L_{eq} during the daytime or 45 L_{eq} during the nighttime, such noise generation would constitute a significant noise impact. As discussed above, noise from construction or decommissioning activities would be exempt from the Fresno County General Plan noise policies and the Fresno County Noise Ordinance standards if the activities would occur between the hours of 6:00 a.m. and 9:00 p.m. on weekdays, or 7:00 a.m. and 9:00 p.m. on Saturdays and Sundays.

For construction noise, peak unmitigated levels have the potential to exceed the Fresno County Exterior Noise Level Standards. However, the construction activities most likely to cause these peak noise levels would occur during typical, daytime hours when construction noise sources are exempt under Fresno County's Noise Ordinance. Project-related construction activities that may occur outside these exempt hours include activity for material and equipment delivery and/or where the schedule has been delayed due to weather or other events.

The Project's decommissioning and site reclamation are conservatively assumed to be similar in extent of noise producing activities as construction activities and, consequently, all construction-related impacts also would apply to decommissioning and site reclamation at the end of the assumed Project life.

Construction of the Project is described in Section 2.5.3, *Construction*, in Chapter 2, *Project Description*, and would consist of several phases, including grading and site preparation and development of staging areas and site access roads. Construction also would involve concrete equipment foundation forming and pouring, the use of cranes to place electrical and structural equipment, burying underground conduit and cabling, installing grounding arrays, erecting buildings, installing the energy storage system, as well as setting poles and stringing power lines.

Construction equipment is identified in Table 2-4, *Project Construction Equipment*, within Chapter 2 and would include standard equipment such as scrapers, dozers, tractors, backhoes, excavators, and other common types of construction equipment. The construction equipment is expected to be spread out over the entire site, with some equipment operating along the perimeter of the site while the rest of the equipment may be located several hundred feet farther from the noise sensitive receptors.

Table 3.14-6 shows the calculated noise levels at the property line of the nearest noise-sensitive receptors for the four most intensive phases of construction. The noise levels shown in Table 3.14-6 conservatively take into account operation of multiple pieces of construction equipment simultaneously for the solar facility L_{eq} results. The modeling also conservatively assumed that all pieces of construction equipment associated with an activity would operate simultaneously for the duration of that activity, as a point source measured from the center of the closest activity area. Additionally, it was conservatively assumed in the construction noise model that there would be no shielding effects due to intervening structures and buildings along the propagation path from the site to receptor locations. Also, because of stringent air quality emissions standards, newer, cleaner, and quieter heavy equipment is used on most construction projects in California.

TABLE 3.14-6
OUTDOOR CONSTRUCTION NOISE LEVELS BY PHASE AT CLOSEST NOISE-SENSITIVE RECEPTORS TO THE SOLAR FACILITY

Construction Phase	Reference Construction Noise Level (L_{max}) for Loudest Single Piece of Equipment at 50 feet	Estimated Construction Noise Level at Receptor (dBA, L_{eq})		
		R1	R2	R3
Site Preparation and Grading	85	57	52	44
Substation Construction	85	56	50	42
Underground Work (Trenching)	84	55	50	41
System Installation	85	55	49	42

NOTE: dBA = A-weighted decibels; L_{eq} = equivalent sound level

SOURCE: Data compiled by Environmental Science Associates in 2023 based on methods identified by Federal Highway Administration, 2006, Roadway Construction Noise Model User's Guide (ESA 2023).

As shown in Table 3.14-6, construction-related noise levels could reach up to 57 dBA L_{eq} at residential property lines to the west of the Project site during construction activities. The greatest estimated hourly L_{eq} is not the result of any particular equipment or activity, but rather the cumulative noise of widespread activity on the Project site. The Fresno County Noise Ordinance exempts construction activity noise from standard exterior noise exposure limits, if conducted during specific hours. Most Project-related construction activity is expected to occur within the window of time covered by the Noise Ordinance exemption. Nonetheless, to evaluate the significance of daytime construction noise levels that would otherwise be exempt from the County's ordinance, the noise levels are compared to FTA's 80 dBA criterion. Since the outdoor construction noise levels by phase at the closest noise-sensitive receptors would be less than 80 dBA, the noise impact of construction activities during daytime hours would be **less than significant**.

Construction would occur primarily during daylight hours, Monday through Friday. If nighttime work hours or work on weekends is necessary, such work could be scheduled consistent with Fresno County General Plan and County code provisions. Construction requirements would require some nighttime activity for material and equipment delivery and/or where the schedule has been delayed due to weather or other events. The nighttime L_{eq} limit is 45 dBA based on the Fresno County Exterior Noise Level Standard and may be exceeded at the nearest receptors when nighttime work is required.

Nighttime construction activities for the Project may cause short-term noise impacts that could be loud enough at times to temporarily interfere with speech communication outdoors and indoors with windows open at R1 and R2. Therefore, the noise impact of construction activities during nighttime hours would be potentially significant. **Mitigation Measure 3.14-1: Noise Reduction for Nighttime Construction and Decommissioning Activities** is identified to address this potential significant impact. **Mitigation Measure 3.14-1** would limit the location and types of activities that might occur during nighttime hours. **Table 3.14-7** shows the distances and received L_{eq} noise level associated with the limited construction areas and equipment. With the implementation of **Mitigation Measure 3.14-1**, nighttime construction noise levels would not exceed Fresno County Exterior Noise Level Standard of 45 dBA L_{eq} and would result in a **less than significant impact with mitigation incorporated**.

TABLE 3.14-7
NIGHTTIME OUTDOOR CONSTRUCTION NOISE LEVELS BY PHASE AT CLOSEST NOISE-SENSITIVE RECEPTORS TO THE SOLAR FACILITY

Construction Area[a]	Distance to Center of Construction Area (feet)			Estimated Construction Noise Level at Receptor (dBA, L_{eq})		
	R1	R2	R3	R1	R2	R3
Area 1	8,450	12,200	26,000	41	38	32
Area 2	5,800	10,500	23,000	45	40	33
Area 3	7,000	8,200	23,300	43	42	33
Area 8a	8,450	7,600	10,500	41	42	40
Area 8b	7,500	11,100	11,300	42	39	39

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level

a. Refer to Figure 2-3, *Site Plan*, for an illustration of the Construction Area locations at the Project site.

SOURCE: Based on methods identified by Federal Transit Administration, 2018, Transit Noise and Vibration Impact Assessment. Construction equipment levels are from Federal Highway Administration, 2006, Construction Noise Handbook

The noise levels resulting from the construction activities would vary significantly depending on several factors such as the type and age of equipment, specific equipment manufacture and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers. Due to the infrequent nature of loud construction activities at the site and the limited hours of construction, the temporary increase in noise due to nighttime construction and decommissioning activities would be less than significant with mitigation incorporated.

Mitigation Measure 3.14-1: Noise Reduction for Nighttime Construction and Decommissioning Activities

Prior to issuance of construction permits for the Project, the Project owner shall submit to the County for approval a Construction Noise Reduction Plan to be implemented by all contractors as a condition of contract. Contents of the Plan should include at a minimum:

- Maintain all construction tools and equipment in good operating order according to manufacturers' specifications;
- Limit use of major excavating, pile driving, earth-moving machinery, and pneumatic tools to daytime hours;
- Equip any internal combustion engine used for any purpose on the job or related to the job with a properly operating muffler that is free from rust, holes, and leaks;
- For construction devices that utilize internal combustion engines, ensure the engine's housing doors are kept closed, and install noise-insulating material mounted on the engine housing consistent with manufacturers' guidelines, if possible;
- Limit possible evening and nighttime shift work to the southern (i.e., Areas 8a and 8b) and/or northern (i.e., Areas 1 through 3) portions of the Project site conducting low noise activities such as welding, wire pulling, and other similar activities, together with appropriate material handling equipment; and
- Utilize a Complaint Resolution Procedure to address any noise complaints received from residents.

Significance after Mitigation: Less than Significant. Mitigation Measure 3.14-1 would address the potential for nighttime construction noise impacts by limiting the types of activities that might occur during nighttime hours to those least likely to generate substantial noise, thus reducing the level of significance. Due to the infrequent nature of construction activities requiring construction outside the hours permitted by the Fresno County noise ordinance, with the implementation of Mitigation Measure 3.14-1, the temporary increase in noise due to Project construction would be less than significant.

Construction Traffic Noise

State Route 33 is the major road in the Project vicinity. Existing traffic noise levels along State Route 33 have been measured to be 34 dBA (see Table 3.14-2, receptor location R3 and monitoring location ST-3). For an increase in construction traffic to result in a noticeable increase in ambient traffic noise, there must be a doubling of traffic. As discussed in transportation Impact 3.18-1, average daily traffic volumes along State Route 33 would increase 42 percent during construction. Therefore, when added to existing traffic, noise from Project construction traffic would not result in an increase in traffic noise (i.e., 3 dBA or greater) that would be readily perceptible at nearby receptors along State Route 33 (e.g., receptor location R3). In addition, construction traffic is anticipated to occur only during the day. Impacts related to construction traffic noise would be less than significant.

Impact 3.14-2: Operation and maintenance of the Heartland Solar Project could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site. (*Less-than-Significant Impact*)

The primary noise sources from operation and maintenance of the Project would be associated with the inverters, transformers, and battery energy storage system (BESS) HVAC systems. Each block of solar panel arrays would be served by a power conversion system comprising an inverter as the major steady-state noise emission source. Other electrical equipment onsite, such as switches, would produce noise only occasionally and thus not contribute substantially to overall noise generated by the Project. Modeling of inverter noise assumed as a small, 5-foot-high building element, with noise emission modeled as a vertical area source on each of the four exterior surfaces of the enclosure. Modeling of BESS aggregate battery container cooling system operation for hourly L_{eq} estimates assume a conservative (i.e., higher sound exposure levels) “hottest day” 24-hour period scenario (see Appendix J, Attachment C).

Noise levels were calculated for expected normal Project operation assuming that all noise-generating components are operating continuously and concurrently at the representative manufacturer-rated sound power. The sound energy was then summed to determine the equivalent continuous downwind sound pressure level at each of the closest receptors.

Table 3.14-8 shows the projected exterior sound levels at each of the closest receptors within 1 mile of the Project site resulting from full, normal operation of the currently-proposed solar and BESS facility. The predicted aggregate noise exposure levels from the solar facility and the BESS facility were modeled to be hourly L_{eq} daytime values of up to 41 dBA and 46 dBA at receptors R1 and R2, respectively, and nighttime values of up to 38 dBA at receptors R1 and R2. Table 3.14-8 shows the predicted facility noise exposure levels combined with and compared to the estimated baseline dBA L_{eq} levels at R1 and R2. Aggregate noise exposure levels at receptor

location R3 would be substantially reduced by well more than 10 dBA compared to R1 and R2 given its location more than 1.8 miles from the Project site, and 2.8 miles from the BESS site.

TABLE 3.14-8
AGGREGATE NOISE MODEL RESULTS FOR THE SOLAR AND BESS FACILITY COMPARED TO AMBIENT L_{EQ} LEVELS

Receptor Location	Type	Daytime Baseline dBA L_{eq}	Nighttime Baseline dBA L_{eq}	Project-Related Daytime dBA L_{eq}	Project-Related Nighttime dBA L_{eq}	Daytime Ambient + Project dBA L_{eq}	Nighttime Ambient + Project dBA L_{eq}
R1	Residence	43	41	41	38	45	43
R2	Residence	48	40	46	38	50	42

NOTES: dBA = A-weighted decibels
Baseline noise levels reflect the lowest noise levels presented in Table 3.14-2.
SOURCE: Data compiled by Environmental Science Associates (ESA 2025a), based on Dudek, 2025 (Appendix J).

As described in Section 3.14.1.2, *Environmental Setting*, the L_{50} levels measured at LT-1 and LT-2 adjacent to West Adams Boulevard may also be used to characterize noise levels at R1 and R2, respectively, because the median sound level does not include the loudest measured noise levels, such as those from passing vehicles, that would be attenuated at R1 and R2 due to distance. Therefore, **Table 3.14-9** shows the predicted facility noise exposure levels combined with and compared to the estimated baseline dBA L_{50} levels.

TABLE 3.14-9
AGGREGATE NOISE MODEL RESULTS FOR THE SOLAR AND BESS FACILITY COMPARED TO AMBIENT L_{50} LEVELS

Receptor Location	Type	Daytime Baseline dBA L_{50}	Nighttime Baseline dBA L_{50}	Project-Related Daytime dBA L_{50}	Project-Related Nighttime dBA L_{50}	Daytime Ambient + Project dBA L_{50}	Nighttime Ambient + Project dBA L_{50}
R1	Residence	35.0	34.2	41	38	42.0	39.5
R2	Residence	43.0	42.0	46	38	47.8	43.5

NOTES: dBA = A-weighted decibels
Baseline noise levels reflect the noise levels presented in Table 3.14-2.
SOURCE: Data compiled by Environmental Science Associates (ESA 2025a), based on Dudek, 2025 (Appendix J).

These noise levels would comply with the County's daytime and nighttime L_{50} thresholds for exterior noise of 50 dBA and 45 dBA, respectively. In addition, the calculated CNEL for the Project at R1 and R2 is 44.7 dBA and 45.2, respectively, which are less than the County's maximum allowable noise exposure level of 60 dBA CNEL for residential land uses (Appendix J). Also, as shown in Tables 3.14-8 and 3.14-9, when the contribution of the combined solar and BESS facilities' noise is added to the existing baseline sound levels at these receptors, the increase in daytime and nighttime noise levels would not exceed baseline daytime and nighttime levels by more than 10 dBA and 5 dBA, respectively, at either location. Therefore, the long-term operational noise impact of the solar and BESS facilities would be less than significant.

Mitigation: None required.

On-Site Vehicles

Regular operation and maintenance of the Heartland Solar Project would typically require three on-site personnel. These three employees would be expected to generate six daily trips. Most operations and maintenance (O&M)-related activities would occur during typical, daytime hours although nighttime work may be required on occasion. Due to the infrequent degree of O&M-related traffic, Project O&M would not cause a perceptible increase in ambient noise levels at the nearest residence locations. Therefore, long-term traffic noise impacts would be less than significant.

Mitigation: None required.

Criterion b) Whether the Project would generate excessive groundborne vibration or groundborne noise levels.

Impact 3.14-3: The Heartland Solar Project could expose people and/or structures to vibration levels and groundborne noise levels. (*Less-than-Significant Impact*)

Temporary sources of groundborne vibration and noise during land grading, trenching, and other Heartland Solar Project construction activities would be produced by the operation of heavy construction equipment. The construction equipment most likely to create vibration include large and small bulldozers, pile drivers, loaded trucks, and jackhammers. The use of heavy equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second PPV at a distance of 25 feet and the typical range for impact pile driving is 0.644 inches per second PPV at 25 feet (Caltrans 2020).

Based on vibration propagation calculations, Project construction vibration levels are predicted to range from 0.00001 PPV inches per second (in/sec; 9 VdB) to 0.016 PPV in/sec (72 VdB) dBA at the nearest receptors. These levels are based on the worst-case vibration producing equipment; it is expected that other vibration generating equipment proposed for Project construction would result in lower vibration levels. **Table 3.14-10** summarizes the predicted vibration levels at each of the receptors based on the highest vibration generating equipment that would operate onsite. As shown in Table 3.14-8, construction would generate vibration levels below the architectural damage threshold of 0.2 in/sec PPV and the human perception threshold of 72 VdB. As such, construction-related vibration associated with the Project would be **less than significant**.

Project construction would not have the potential to generate significant short-term groundborne vibration or noise at the noise sensitive receptors due to distance attenuation. The Project does not propose the use of large, rotating equipment during Project operation that would introduce any new sources of perceivable groundborne vibration. In addition, operation and maintenance would not require the use of heavy equipment. Therefore, there is no potential for significant vibration impacts resulting from Project operations. Decommissioning activities would include the use of similar equipment as for construction and would similarly not impact nearby sensitive receptors. Therefore, groundborne vibration impacts would be less than significant.

TABLE 3.14-10
PROJECTED CONSTRUCTION VIBRATION LEVELS –SOLAR FACILITY

Construction Operation	Vibration Metric	Reference Vibration Level (at 25 Feet)	R1	R2
Vibratory Caisson	Inches/sec (PPV)	0.089	0.016	0.00001
Vibratory Caisson	VdB	87	72	10
Bulldozer	Inches/sec (PPV)	0.089	0.016	0.00001
Bulldozer	VdB	87	72	10
Truck (loaded)	Inches/sec (PPV)	0.076	0.013	0.00001
Truck (loaded)	VdB	86	71	9

NOTES: PPV = peak particle velocity; VdB = vibration decibels

Mitigation: None required.

Criterion 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 2 miles of a public airport or public use airport, whether the Project would expose people residing or working in the project area to excessive noise levels.

The Project would not be located within the vicinity (i.e., 2 miles) of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport, and so would not expose people residing or working in the Project area to excessive noise levels. (*No Impact*)

The Project does not include development of land uses near an airport influence area. There are no public airports within 2 miles of the Project site (FCOG 2018) and a review of aerial photography indicates that there also are no private airstrips within 2 miles of the Project site. Therefore, the Project would cause no impact with respect to exposure of people residing or working within the vicinity of a private airstrip or a public airport or public use airport in the project area.

Mitigation: None required.

3.14.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Impact 3.14-4: Construction of the PG&E Components during nighttime hours could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance. (*Less-than Significant*)

The closest sensitive receptor to the PG&E Components sites is the residence at receptor location R3, approximately 0.8 mile southeast of the Tranquillity Switching Station upgrades site. To estimate construction noise levels associated with the upgrades, it is assumed that up to three heavy pieces of equipment would operate at the same time during the site grading/preparation phase of construction activities at the 2-acre site. At 0.8 mile, the construction noise level would be 47 dBA (ESA 2025b), which is less than the FTA's 80 dBA criterion for daytime construction noise. PG&E construction would occur only during daytime hours, to the extent feasible given clearance requirements. All construction equipment would be fitted with mufflers and other suitable noise attenuation devices. Therefore, the noise impact of any PG&E construction activities would be less than significant.

Regarding long-term operations of the switchyard upgrades, the new 230 kV breaker-and-a-half configuration that would be installed at the existing 230 kV Tranquillity Switching Station would be expected to generate approximately the same or less noise as already produced at the station. At the nearest residence (R3) 0.8 mile away, the proposed breaker-and-a-half configuration would be expected to generate a noise level much less than County's nighttime exterior limit of 45 dBA and even assuming the conservative scenario of a potential doubling of noise at the switching station due to the upgrades would result in an increase in ambient noise level of approximately 3 dBA. Therefore, operations of the PG&E Components would result in a less-than-significant impact. (*Less than Significant Impact*)

Construction of the PG&E Components would not have the potential to generate significant short-term groundborne vibration or noise at the closest noise sensitive receptors due to distance attenuation and operation of the components would not introduce any new sources of perceivable groundborne vibration. Therefore, vibration impacts would be less than significant. The PG&E Components would not be located within the vicinity (i.e., 2 miles) of a private airstrip or an airport land use plan or within 2 miles of a public airport or public use airport and so would not expose people residing or working in the area to excessive noise levels. There would be no airport noise impact. (*No Impact*)

3.14.4 Cumulative Effects Analysis

3.14.4.1 Cumulative Effects of the Heartland Solar Project

The geographic scope considered for potential cumulative impacts related to noise is existing sensitive receptor sites within 1 mile of the Project site that are also within 1 mile of a cumulative project identified in Table 3.3-1 because sounds naturally attenuate with distance and topography and the temporal scope for cumulative noise impacts begins with the commencement of onsite noise generating activities, and would cease when Project decommissioning and site restoration activities are complete.

Criterion a)

Impact 3.14-1c: The Heartland Solar Project would contribute to a significant cumulative effect due to the generation of a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance during construction and decommissioning activities. (*Less-than-Significant Impact*)

As analyzed in the context of Impact 3.14-1, the Heartland Solar Project would result in a potentially significant impact if construction activities were to occur during nighttime hours during the construction and decommissioning period at two sensitive receptor locations: R1 and R2. This potential significant impact would be reduced to a less-than-significant level with the implementation of **Mitigation Measure 3.14-1**.

The geographic scope considered for potential cumulative impacts related to noise is the potential for cumulative projects located within 1 mile of R1 or R2 to combine with the Project's incremental impacts. As described in Table 3.3-1, the Adams East, Sonrisa, and Luna Valley solar projects are located approximately 1 mile from the Project site and the exact location(s) for the Valley Clean Infrastructure Plan/Golden State Clean Energy project are unknown. Of these projects, the Adams East and Sonrisa solar projects and the Valley Clean Infrastructure Plan/Golden State Clean Energy project would cause noise that could combine with the Project noise to collectively affect ambient noise levels at R2; however, construction of the Adams East project has already concluded, and it is currently in its operation phase. The Luna Valley Solar Project is approximately 1.3 miles from R2, and so noise generated by the Luna Valley project would attenuate before it could combine with Project noise to affect R2. The Valley Clean Infrastructure Plan/Golden State Clean Energy project is in early planning stages and would not overlap with Project construction. Thus, the cumulative projects would not combine with the Project to cause a significant adverse cumulative effect relating to ambient noise conditions at R2. Cumulative impacts would be less than significant, and the Project's incremental contribution would not be cumulatively considerable.

Regarding R1, only the Valley Clean Infrastructure Plan/Golden State Clean Energy project could cause noise that could combine with Project noise to collectively affect ambient noise levels at this receptor location; however, as noted, its construction would not overlap with Project construction. Sonrisa Solar would be approximately 1.1 miles, Luna Valley would be approximately 1.3 miles, and Adams East would be 1.4 miles from R1; therefore, the noise from these projects would attenuate before they could combine with Project noise to affect R1. Cumulative impacts would be less than significant, and the Project's incremental contribution would not be cumulatively considerable.

Mitigation: None required.

Impact 3.14-2c: The Heartland Solar Project would not contribute to a substantial cumulative temporary or permanent increase in ambient noise levels during operation and maintenance activities. (*Less-than-Significant Impact*)

As analyzed in Impact 3.14-2 and shown in Tables 3.14-8 and 3.14-9, when the contribution of the combined solar and BESS facilities' noise is added to the existing baseline sound levels at

receptor locations R1 and R2, the increase in daytime and nighttime noise levels would not exceed baseline daytime and nighttime levels by more than 10 dBA and 5 dBA, respectively, at both locations. Therefore, the long-term operational noise impact of the proposed solar and BESS facilities would be less than significant.

This analysis conservatively considers the potential for noise generated by the Adams East and Sonrisa solar projects, and the Valley Clean Infrastructure Plan/Golden State Clean Energy project to combine with Project operational noise to collectively affect ambient noise levels at R2, and for Project noise to combine with noise from the Valley Clean Infrastructure Plan/Golden State Clean Energy project to cause a significant adverse cumulative effect relating to ambient noise levels at R1. It is reasonable to assume that the incremental impact of the Project could combine with the incremental impacts of these other projects to increase ambient noise levels. However, due to the distance of the Project site, R1, and R2 from the Adams East and Sonrisa solar projects and the lack of detailed information associated with Valley Clean Infrastructure Plan/Golden State Clean Energy project within the Westlands Water District boundary due to the early planning stage of that project, there is no basis to conclude that the Project's incremental contribution would be cumulatively considerable given that the operational noise from the Project would not result in an exceedance of noise level standards of the Fresno County general plan or municipal code, or result in an exceedance of 10 dBA or more over the lowest 1-hour L_{eq} or L_{50} ambient daytime noise levels and/or 5 dBA or more over the lowest 1-hour L_{eq} or L_{50} ambient nighttime noise levels. Therefore, the Project's contribution to the cumulative impact would not be cumulatively considerable and so the cumulative impact would be less than significant.

Mitigation: None required.

Criterion b)

Impact 3.14-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to exposure of people or structures to vibration levels and groundborne noise levels. (*Less-than-Significant Impact*)

None of the projects identified in Table 3.1-1, *Cumulative Projects List*, in Section 3.1, *Introduction to Environmental Analysis*, would cause vibration or groundborne noise impacts that could combine with the Heartland Solar Project's impacts. Therefore, the Project's less than significant impact could not combine with the incremental impacts of other projects to cause a significant cumulative effect. The Project's cumulative effect would be less than significant.

Mitigation: None required.

Criterion c)

As analyzed in Section 3.14.3.3, Direct and Indirect Effects, the Project would not include development of land uses near an airport influence area because there are no public airports and no private airstrips within 2 miles of the Project site. Therefore, the Project would not cause or contribute to any cumulative effect relating to the exposure of people residing or working within the vicinity of a private airstrip or a public airport or public use airport in the project area. (*No Impact*)

Mitigation: None required.

3.14.4.2 Cumulative Effects of the PG&E Components

Impact 3.14-4c: Construction of the PG&E Components during nighttime hours could generate noise that, in combination with noise generated by other projects, could exceed nighttime noise level standards established in the local general plan or noise ordinance. (*Less-than-Significant Impact*)

As described in Section 3.14.3.3, PG&E construction activities would not result in significant impacts at sensitive receptor location R3 during construction. The geographic scope considered for potential cumulative impacts related to PG&E component noise is the potential for cumulative projects located within 1 mile of R3 to have the potential to combine with the incremental impacts of the PG&E components. The Valley Clean Infrastructure Plan/Golden State Clean Energy project is located within 1 mile of the PG&E components sites and R3; however, the project is in early planning stages and would overlap with PG&E Component construction. The Luna Valley, Adams, and Sonrisa solar projects are each over 1 mile from receptor location R3 and would therefore have limited contributions to cumulative impacts at R3. Thus, cumulative noise impacts at receptor location R3 would be less than significant, and the incremental impact of the PG&E Components would not be cumulatively considerable.

The long-term operations of the PG&E components would result in a less-than-significant impact at receptor location R3. The new 230 kV breaker-and-a-half configuration that would be installed at the existing 230 kV Tranquillity Switching Station could generate noise levels that could combine with operational noise levels of any future project that would be developed under the Valley Clean Infrastructure Plan/Golden State Clean Energy project; however, operational noise from the PG&E components would be minor and have little impact on existing noise from the Switching Station. Thus, cumulative impacts would be less than significant and the incremental contribution from the PG&E Components would not be cumulatively considerable. (*Less-than-Significant Impact*)

Construction of the PG&E components would result in vibration impacts that would be less than significant. Given how vibration levels attenuate rapidly with distance, the vibration levels would not be expected to combine with vibration levels of the Valley Clean Infrastructure Plan/Golden State Clean Energy project to result in a significant cumulative vibration impact. In addition, the PG&E components would not have an impact due to exposure of people residing or working in the area to excessive aircraft noise levels. Therefore, the PG&E components would not contribute to a cumulative aircraft noise impact. (*No Impact*)

3.14.5 References

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3.15 Population and Housing

This section identifies and evaluates issues related to population and housing, including the potential for population growth and the displacement of existing people or housing as a result of the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. Fresno County (the County) received no scoping comments regarding population and housing (Appendix A, *Scoping Report*).

3.15.1 Setting

3.15.1.1 Study Area

The study area for the analysis of potential impacts to population and housing includes the Project site and the communities within 75 miles of the Project site (within and beyond Fresno County), which represents the maximum reasonable distance that Project construction and other workers would reasonably be expected to travel for work at the Project site.

3.15.1.2 Environmental Setting

Population

The Project site is located in an unincorporated area of Fresno County. Although the mean commute time in Fresno County is 23.3 minutes (U.S. Census Bureau 2022), this analysis conservatively assumes that workers may commute more than three times longer than that amount of time to work at the Project site (a car traveling 65 miles per hour could travel 25 miles in 23.3 minutes and 75 miles in 1 hour and 9 minutes).

Population estimates for Fresno County and cities within a 75-mile radius of the Project site are identified in **Table 3.15-1**.

As shown in Table 3.15-1, most of the cities within the study area have experienced moderate amounts of growth between 2000-2022. In 2022, Fresno County had an estimated population of 1,011,273 representing an approximate 9 percent increase from the 2010 population of 930,450. The City of Mendota had a higher rate of growth during the 2010-2022 period, but its actual growth was only 1,426 persons. The City of Fresno had an estimated population of 543,660 in 2022, which represents an approximate 10 percent increase from 2010.

From 2010-2050, the San Joaquin Valley region is expected to have a projected annual growth rate of 1.33 percent. Fresno County is expected to grow at a slightly slower rate (1.2 percent annually) than the region while Kings County, Madera County, and Merced County are anticipated to grow at a slightly faster rate than the region (Fresno Council of Governments [FCOG] 2012).

TABLE 3.15-1
REGIONAL POPULATION ESTIMATES, 2000–2022

Area	2000[a]	2005[a]	2010[a]	2015[b]	2022[c]
Fresno County	799,407	866,058	930,450	975,108	1,011,273
City of Fresno	427,719	457,786	494,665	522,016	543,660
City of Mendota	7,890	9,179	11,014	11,235	12,440
City of Clovis	68,516	84,552	95,631	105,038	123,665
City of Reedley	20,756	21,447	24,194	25,542	24,982
City of Sanger	18,931	21,297	24,270	25,246	26,304
City of Selma	19,444	22,160	23,219	23,898	24,522
City of Kerman	8,548	10,985	13,544	14,584	16,639
City of San Joaquin	3,270	3,569	4,001	4,063	3,639
City of Firebaugh	5,743	6,953	7,549	7,827	8,439
City of Turlock	55,811	65,301	68,549	72,247	71,531
City of Newman	7,092	8,798	10,224	10,809	12,244
City of Patterson	11,606	15,677	20,413	21,280	24,370
City of Madera	43,205	51,735	61,416	63,147	65,843
City of Chowchilla	14,416	16,052	18,720	18,626	18,851
City of Atwater	23,113	26,829	28,168	29,555	31,652
City of Merced	63,893	72,402	78,958	82,379	89,058
City of Los Banos	25,869	32,061	35,972	37,668	46,639
City of Livingston	10,473	11,818	13,058	13,983	14,410
City of Dinuba	16,844	18,989	21,453	24,135	25,127
City of Visalia	91,891	106,054	124,442	130,627	142,091
City of Tulare	43,994	48,974	59,278	62,407	69,462
City of Hanford	41,687	48,016	53,967	55,844	58,299

SOURCES:
a. California Department of Finance (CDF) 2012.
b. CDF 2022a.
c. CDF 2022b.

Housing

Table 3.15-2 summarizes housing data for Fresno County and the cities in the study area in 2022. Vacancy rates for these jurisdictions ranged from 2.0 percent (City of Mendota) to 5.6 percent (City of Merced). As of January 1, 2022, Fresno County had an estimated 343,513 housing units with a vacancy rate of 5.6 percent; the City of Fresno had an estimated 186,993 housing units with a vacancy rate of 4.5 percent; and the City of Mendota had an estimated 2,889 housing units with a vacancy rate of 2.0 percent (California Department of Finance [CDF] 2022c).

TABLE 3.15-2
2022 REGIONAL HOUSING ESTIMATES

	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Vacancy Rate (percent)
Fresno County	343,513	324,107	19,407	5.6%
City of Fresno	186,993	178,587	8,406	4.5%
City of Mendota	2,889	2,831	58	2.0%
City of Clovis	45,835	43,924	1,911	4.2
City of Reedley	7,363	7,124	239	3.2%
City of Sanger	7,827	7,583	244	3.1%
City of Selma	7,246	7,027	219	3.0%
City of Kerman	4,745	4,645	100	2.1%
City of San Joaquin	937	899	38	4.1%
City of Firebaugh	2,343	2,238	105	4.5%
City of Turlock	25,313	24,363	950	3.8%
City of Newman	3,775	3,649	126	2.8%
City of Patterson	6,994	6,759	235	3.4%
City of Madera	18,355	17,547	808	4.4%
City of Chowchilla	4,451	4,254	197	4.4%
City of Atwater	10,439	10,081	358	3.4%
City of Merced	30,565	28,861	1,704	5.6%
City of Los Banos	13,857	13,175	682	4.9%
City of Livingston	3,862	3,780	82	2.1%
City of Dinuba	7,170	6,914	256	3.6%
City of Visalia	49,513	47,591	1,922	3.9%
City of Tulare	21,900	21,127	773	3.5%
City of Hanford	20,171	19,398	773	3.8%

SOURCE: CDF 2022c.

2022 projections anticipated that the number of households would increase by 20 percent in Fresno County over the period from 2013-2023 and that the number of households in the cities of Fresno and Mendota each would increase by 16.5 percent over the 10-year time period. In addition, the Sixth Cycle Regional Housing Needs Allocation Plan determined that the Fresno Council of Governments region would need to contribute 58,298 units for the housing projection period beginning June 2023, and ending December 2031 (FCOG 2022a).

Employment

The California Employment Development Department estimated that the annual average unemployment rate in Fresno County as of December 2022 was approximately 6.2 percent or 28,100 persons (not seasonally adjusted) compared to the statewide unemployment rate of 3.7 percent (California Employment Development Department [CEDD] 2023a, 2023b). In December 2021, the Fresno County construction industry employed an average of 19,700 people. As of December 2022, construction activity has increased employing 20,500 people, and lowered unemployment to 4.1 percent (CEDD 2023a).

3.15.1.3 Regulatory Setting

Federal

No federal statutes, regulations, plans, or policies govern the County's analysis of potential Project impacts on population and housing.

State

No state statutes, regulations, plans, or policies govern the County's analysis of potential Project impacts on population and housing.

Local

Fresno County General Plan

The Board of Supervisors adopted the updated Fresno County General Plan in February 2024; however, as of December 2024, the 2023−2031 Housing Element had not yet been adopted (Fresno County 2024). Accordingly, this analysis relies on the goals, policies, and implementation measures related to population and housing set forth in the 2015–2023 Housing Element, which was adopted in April 2016 (Fresno County 2016). Multijurisdictional Housing Element policies that are relevant to the Project include:

> ***Policy 1.9:*** Encourage development around employment centers that provides the opportunity for local residents to live and work in the same community by balancing job opportunities with housing types.
>
> ***Policy 3.1:*** Preserve the character, scale, and quality of established residential neighborhoods by protecting them from the encroachment of incompatible or potentially disruptive land uses and/or activities.

Fresno County Solar Facility Guidelines

In December 2017, the Fresno County Board of Supervisors revised the County of Fresno Solar Facility Guidelines. As a part of this revision process, the Board of Supervisors added Guideline Number 12, which states, "If the project is approved, the applicant shall make all reasonable efforts to conduct local recruitment efforts and/or coordinate with employment agencies in an attempt to hire from the local workforce" In turn, Guideline Number 14 states, " If the project is approved, the applicant shall make all reasonable efforts to purchase products and equipment from local (Fresno County) manufacturing facilities and/or vendors." (Fresno County 2017) Project consistency with the County's Solar Facility Guidelines is analyzed in Appendix I2.

Fresno Council of Governments

FCOG is a regional planning organization comprised of representatives from Fresno County and its 15 incorporated cities. FCOG's primary responsibilities include transportation and housing planning. FCOG is the state-designated Regional Transportation Planning Agency and federally-designated Metropolitan Planning Organization for Fresno County (FCOG 2022b). FCOG is responsible for preparing the Regional Housing Needs Allocation (RHNA) Plan, a state-mandated document that determines the number of housing units each city and county are responsible for accommodating in the housing element section of their general plan. The Sixth-Cycle Final RHNA Plan for the Fresno County region was adopted by the FCOG's Policy Board on

November 17, 2022. For the sixth cycle RHNA, the housing projection period began June 30, 2023, and ends December 31, 2031 (FCOG 2022a). The plan relies on Census data, CDF data, California Department of Housing and Community Development data, and FCOG calculations and determines how best to allocate regional housing needs to Fresno County jurisdictions (FCOG 2022a).

3.15.2 Significance Criteria

The Project would result in significant impacts to population and housing if it would:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

3.15.3 Direct and Indirect Effects

3.15.3.1 Methodology

This evaluation of potential population and housing impacts is based upon the potential for the Project to induce substantial unplanned population growth within approximately 75 miles of the Project site or to displace people or housing within that area such that replacement housing could be required. The nature of the Project, in consideration with regional population and housing characteristics, was evaluated to determine whether the Project would result in a significant population and housing impact.

3.15.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would induce substantial unplanned 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).

The Heartland Solar Project would not induce substantial unplanned population growth in an area, either directly or indirectly. (*No Impact*)

The Project proposes no new homes and so would not induce population growth on this basis. Further, it is expected that an average of 400 workers would be onsite to construct the solar facility, with a maximum of 560 workers at the peak of construction, over a 40-month period. Based on the demographic profile of western Fresno County it is anticipated that a majority of the construction workforce would be hired from the existing workforce in the region. Once operational, approximately three staff members typically would be onsite with crews of up to 10 workers as needed for equipment maintenance or replacement. Project decommissioning and site restoration is expected to require the same or fewer workers than needed for construction.

Heartland Solar 1, LLC (the Applicant) has committed to recruiting and hiring from the local workforce consistent with the County's Solar Facility Guideline Number 12 (see Appendix I2). Industry and unemployment data presented in Section 3.15.1.2, *Environmental Setting*, suggest that the number of jobs created by the Project's construction, operation, and decommissioning could be served by the existing labor pool in Fresno County. Any increase in local economic activity due to the Applicant's commitment to purchase local products and equipment in compliance with Guideline 14 is not anticipated to result in the migration of workers into the study area.

As a result, workers would be expected to commute to the site from local and regional towns and cities, rather than relocate. Therefore, the Project is not expected to require substantial numbers of new housing units, the construction of which could cause environmental impacts. Additionally, even if all of the Project's workforce moved into the County, the County's housing market has the capacity to absorb the increase in residents without requiring the construction of new housing units. The Project would not directly or indirectly induce substantial unplanned population growth to the area. (*No Impact*)

Mitigation: None required.

Criterion b) Whether the Project would displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

The Project would not displace any existing people or housing from the Project site, which is not presently used for residential purposes. See Section 2.3, *Existing Land Uses*, which explains that the site has been intermittently dry farmed for grain or forage crops or has lain fallow for at least the past 10 years. There are not substantial numbers of people, and no housing is present on the Project site that would be displaced by the Project. Therefore, the Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. (*No Impact*)

Mitigation: None required.

3.15.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Implementation of the PG&E Components would not induce substantial unplanned population growth in the area because no new homes or businesses are proposed and because the proposed

construction of 1,000 linear feet of new gen-tie line would not induce people to move to the area. In light of the limited nature of the proposed work and the existing presence of PG&E employees and contractors serving the area under baseline conditions, the workers needed for PG&E Components would be expected to commute to the site from local and regional towns and cities, rather than relocate. Therefore, the Project is not expected to require substantial numbers of new housing units, the construction of which could cause environmental impacts. Even if all of the workforce needed for the PG&E Components moved into the County, the County's housing market could accommodate the number of new residents without requiring the construction of new housing units. The PG&E Components would not directly or indirectly induce substantial unplanned population growth to the area. The PG&E Components also would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere: no replacement housing would be necessitated by the Project. (*No Impact*)

Mitigation: None required.

3.15.4 Cumulative Effects Analysis

Because the Heartland Solar Project and PG&E Components would cause no impact related to population or housing, the Project would not cause or contribute to any cumulative impacts related to population and housing.

Mitigation: None required.

3.15.5 References

CDF (California Department of Finance). 2012. *E-4 Population Estimates for Cities, Counties, and the State, with 2000 and 2010 Census Counts*. Sacramento, CA. Revised November 9, 2012.

CDF (California Department of Finance). 2022a. *E-4 Population Estimates for Cities, Counties, and the State, 2011–2020 with 2010 Census Benchmark*.

CDF (California Department of Finance). 2022b. *E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change—January 1, 2021 and 2022.*

CDF (California Department of Finance). 2022c. *E-5 Population and Housing Estimates for Cities, Counties and the State—January 1, 2021–2022*.

CEDD (California Employment Development Department). 2023a. Labor Force and Industry Employment Data for Metropolitan Areas Fresno MSA.

CEDD (California Employment Development Department). 2023b. Historical Data for Unemployment Rate and Labor Force (Not Seasonally Adjusted) in Fresno County and California.

FCOG (Fresno Council of Governments). 2012. San Joaquin Valley Demographic Forecasts 2010–2050. March 27, 2012. Accessed October 10, 2022.

FCOG (Fresno Council of Governments). 2022a. *Sixth Cycle Regional Housing Needs Plan*.

FCOG (Fresno Council of Governments). 2022b. About COG.

Fresno County. 2016. Fresno Multi-Jurisdictional 2015-2023 Housing Element A Regional Plan for Addressing Housing Needs. Adopted April 2016.

Fresno County. 2017. *Solar Facility Guidelines.* Approved by Fresno County Board of Supervisors on May 3, 2011. Revised December 12, 2017.

Fresno County. 2024. *Fresno County General Plan, Comprehensive General Plan Review and Revision.* Final. February 2024.

U.S. Census Bureau. 2022. QuickFacts, Fresno County, California.

3.16 Public Services

This section identifies and evaluates issues related to public services, including fire and police protection facilities, schools, parks, and libraries. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). Fresno County (the County) did not receive scoping comments pertaining to public services. See Appendix A, *Scoping Report*.

3.16.1 Setting

3.16.1.1 Study Area

The study area for this analysis of potential impacts to public services is defined to include the service areas of fire protection, law enforcement services, schools, parks, libraries, and other public facilities that would serve the Project.

3.16.1.2 Environmental Setting

Fire Protection

Fire protection services in the vicinity of the Project site are provided by the Fresno County Fire Protection District (FCFPD). From 15 fire stations, the FCFPD serves a population of more than 220,000 in a service area encompassing approximately 2,655 square miles (FCFPD 2022a, 2022b, 2023). The FCFPD provides a full range of emergency response services, including structural and wildland fire suppression, response to hazardous materials incidents, search and rescue, technical rescue, vehicle extrication, and basic life support medical services. The FCFPD responded to 12,530 calls within the District and an additional 2,358 calls outside the District in 2022 (FCFPD 2022b). Of these, 64 percent were rescue EMS calls, 28 percent were fire or explosion calls, and the remaining 8 percent of calls were divided equally between hazardous conditions and other incident types (FCFPD 2022b).

The Project site is within 10 miles of Fresno County Fire Stations 95 and 96. Station 95 is located approximately 9 miles northeast at 25101 Morton Street in the community of Tranquillity. Station 96 is located approximately 10 miles north of the Project site. In terms of emergency medical response, the nearest public hospital to the Project site is in Mendota: the United Community Health Center is located at 121 Barboza Street.

Police Services

The Fresno County Sheriff's Office (FCSO) provides law enforcement services to the unincorporated areas of Fresno County. Patrol services are divided into four patrol areas, each commanded by a lieutenant who supervises field services from a substation located in each of the areas. The four patrol areas comprise 182 sworn officers, resulting in a ratio of 1 sworn officer per 5,556 residents served (FCSO 2019).

The Project site is in the sheriff's patrol Area 1. The Area 1 substation is located at 21925 West Manning Avenue in the City of San Joaquin. This station currently is closed to the public due to staff shortages. Personnel are assigned to work out of Area 1 substation, but community members are asked to report crime through the Sheriff's dispatch. Area 1 encompasses approximately 2,400 square miles of western Fresno County and contains the cities of San Joaquin, Coalinga, Huron, Kerman, Mendota, and Firebaugh. Area 1 also includes the unincorporated communities of Tranquillity, Biola, Five Points, Helm, Three Rocks, Cantua Creek, and Dos Palos. As of 2019, Area 1 personnel included one lieutenant, six sergeants, twenty-six deputies, one detective and one community service officer (FCSO 2019, 2022a, 2022b).

Schools

The Fresno County Office of Education (FCOE) serves 32 school districts with over 200,000 students (FCOE 2022a). The Project site is located within the Mendota Unified School District. The district includes three elementary schools, one middle school, and one high school (FCOE 2022b).

Parks

The County offers a variety of recreational opportunities including regional parks, city parks, state and national parks, national forests, wilderness areas, scientific research areas, and other sites that offer recreational opportunities. There are no parks or recreational facilities in the immediate vicinity of the Project site. See Section 3.17, *Recreation*, for additional information about parks and recreation resources.

Other Public Facilities

The Tranquillity Branch of the Fresno County Public Library is located approximately 8 miles northeast of the Project site. The nearest public hospital is the United Community Health Center located at 121 Barboza Street, in Mendota, approximately 9 miles north of the Project site.

3.16.1.3 Regulatory Setting

Federal

No federal statutes, regulations, plans, or policies governing public services apply to the Project.

State

Revenue and Taxation Code Section 73

Revenue and Tax Code section 73 provides a property tax exclusion for the new construction of active solar energy systems. The exclusion prevents an increase in property tax assessments due to the installation of qualifying solar energy systems. The exclusion is set to sunset on January 1, 2027. Construction would have to be complete before the sunset date to qualify for the Section 73 exclusion. Without the exclusion, properties would be subject to increased property tax assessments due to the installation of a newly constructed solar energy system.

Local

Fresno County General Plan

The Public Facilities and Services Element of the County General Plan contains goals, policies, and implementation program measures to ensure public facilities and services are adequately available and accessible in a timely fashion to serve new development (Fresno County 2024).

The following goal within Section A, *Public Facilities and Services Element* pertains to the Project:

> **Goal PF-A:** To ensure the timely development of public facilities and to maintain an adequate level of service to meet the needs of existing and future development.

The following goals and policies within Section G, *Law Enforcement,* of the Public Facilitates and Services Element, are relevant to the Project:

> **Goal PF-G:** To protect life and property by deterring crime and ensuring the prompt and efficient provision of law enforcement service and facility needs to meet the growing demand for police services associated with an increasing population.
>
> > ***Policy PG-G.1: Effective Law Enforcement.*** The County shall ensure the provision of effective law enforcement services to unincorporated areas in the County.
> >
> > ***Policy PF-G.2: Law Enforcement Staffing Standards.*** The County shall strive to maintain a staffing ratio of two (2) sworn officers serving unincorporated residents per 1,000 residents served. (This count of officers includes all ranks of deputy sheriff personnel and excludes all support positions and all sworn officers serving county wide population interests such as bailiffs, and sworn officers serving contract cities and grant specific populations).
> >
> > ***Policy PF-G.6: Safe Design Features.*** The County shall promote the incorporation of safe design features (e.g., lighting, adequate view from streets into parks) into new development by providing Sheriff Department review of development proposals.

The following goals, policies and implementation programs within Section H, *Fire Protection and Medical Services*, of the Public Facilities and Services Element, are relevant to the Project:

> **Goal PF-H:** To ensure the prompt and efficient provision of fire and emergency medical facility and service needs, to protect residents of and visitors to Fresno County from injury and loss of life, and to protect property from fire.
>
> > ***Policy PF-H.1: Provision of Fire/Emergency Medical Service.*** The County shall work cooperatively with local fire protection districts to ensure the provision of effective fire and emergency medical services to unincorporated areas within the County.
> >
> > > *Implementation Program PF-H.B:* The County shall work with the California Department of Forestry and Fire Protection, local fire protection agencies, and city fire departments to maximize the use of resources to develop functional and/or operational consolidations and standardization of services and to maximize the efficient use of fire protection resources. (See Policy PF-H.1).
> >
> > ***Policy PF-H.2: Adequate Fire Protection Facilities:*** Prior to the approval of development projects, the County shall determine the need for fire protection services. New development

in unincorporated areas of the County shall not be approved unless adequate fire protection facilities are provided.

Policy PF-H.5: Minimize Fire Risk. The County shall require that new development be designed to maximize safety and minimize fire hazard risks to life and property.

Policy PF-H.8:Minimum Response Times. The County shall encourage local fire protection agencies in the county to maintain the following as minimum standards for average first alarm response times to emergency calls:

a. 5 minutes in urban areas;

b. 15 minutes in suburban areas; and

c. 20 minutes in rural areas.

Policy PF-H.10: California Fire Code. 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.

Policy PF-H.11: Emergency Medical Service. The County shall encourage local fire protection agencies to provide and maintain advanced levels of emergency medical services (EMS) to the public, consistent with current practice.

The following goals, policies and implementation programs within Section I, *Schools and Library Facilities,* of the Public Facilities and Services Element*,* are relevant to the Project:

Goal PF-I: To provide for the educational needs of Fresno County and provide libraries for the educational, recreational, and literary needs of Fresno County residents.

Policy PF-I.1: Quality Education Facilities. The County shall encourage school districts to provide quality educational facilities to accommodate projected student growth in locations consistent with land use policies of the General Plan.

Policy PF-I.4: Planning School Facility Needs. The County shall work cooperatively with school districts in monitoring housing, population, and school enrollment trends and in planning for future school facility needs and shall assist school districts in locating appropriate sites for new schools.

The following goals, policies and implementation programs within Section H, *Parks and Recreation*, of the Open Space and Conservation Element, are relevant to the Project:

Goal OS-H: To designate land for and promote the development and expansion of public and private recreational facilities to serve the needs of residents and visitors.

Policy OS-H.2: Park Standards. The County shall strive to maintain a standard of five (5) to eight (8) acres of County-owned improved parkland per one thousand (1,000) residents in the unincorporated areas.

Fire District Strategic Financial Plan 2025-2030

The Fresno County Fire District is considering the need for development impact fees to support additional fire facilities and equipment to serve new development in the County (Fresno County FCFPD 2025). Any such development impact fees would require County Board of Supervisors' approval prior to taking effect. However, if the Fire District proposes and the Board of Supervisors

adopts development impact fees addressing fire services, then the Heartland Solar Project may be subject to those fees. This would result in the Project making fair share payments supporting additional fire services in the County and in the area surrounding the Heartland Solar Project site.

The Heartland Solar Project is planning to begin operations in 2028. If the current property tax exclusion under California Revenue and Taxation code section 73 sunsets on January 1, 2027, then the Project would not be subject to solar property tax exclusions, which will provide significant funds to support public services, including additional fire services.

3.16.2 Significance Criteria

The Project would result in significant impacts to public services if it would:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

   i. Fire protection
   ii. Police protection
   iii. Schools
   iv. Parks
   v. Other public facilities

3.16.3 Direct and Indirect Effects

3.16.3.1 Methodology

The evaluation of potential public services impacts was based upon the likelihood of the Project to increase demand, alter, or interfere with existing public services in a manner that would generate a need for the construction of new, or the alteration of existing, public services facilities, the construction of which could cause an adverse change in the physical environment.

3.16.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other public facilities.

The Heartland Solar Project does not propose, and would not require, the construction of new or physical alteration of existing governmental facilities to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other public facilities. Impacts related to public services typically result from a

substantial increase in population. As analyzed in Section 3.15, *Population and Housing*, the Project does not propose new housing and would not contribute to a substantial increase in population. The construction and decommissioning workforce would be temporary, the longer-term operations and maintenance phase demand for workers would be low, and substantially all workers are expected to be drawn from the Fresno County labor pool and neighboring communities. Therefore, Project-affiliated individuals who could generate a demand on public services already are counted in the population served by police, fire, emergency medical, school, park, library, and other public facilities.

Project construction could result in emergency situations that require emergency response services, including fire protection. Temporary lane closures if needed during construction activities could result in delays that could affect emergency response times; however, such delays would not require the construction of new or altered facilities to provide adequate fire protection services. Project construction activities would temporarily increase traffic in the Project vicinity due to construction worker vehicle and equipment trips. This increase in traffic could temporarily affect the demand for fire protection and emergency response services if motor vehicle accidents were to occur or if construction activities were to ignite a fire or result in a hazardous materials incident that required an emergency response. However, this potential temporary increase would not sufficiently increase demand such that new emergency response facilities would need to be constructed, or that existing facilities in the Project area would need to be expanded. Accordingly, the Heartland Solar Project would not result in substantial adverse physical impacts associated with the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire, emergency response, or other public services.

Construction and operation of the Project also could result in temporary increases in the demand for police services, e.g., to address any vandalism or theft of equipment, or require emergency medical response. However, the Project site would be secured to minimize threats and operated consistent with public health and safety requirements. Any increases in the demand for services would be rare, negligible, and an insufficient increase in demand to affect standard response times or require redress by the construction of new or physically altered law enforcement or other emergency response-related facilities.

For these reasons, the Project would cause no impact to public services. (*No Impact*)

Mitigation: None required.

3.16.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station,

including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Construction, operation and maintenance of the PG&E Components would not result in substantial adverse physical impacts associated with the provision of (or need for) new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for: fire protection, police protection, schools, parks, or other public facilities. In light of the limited nature of the proposed work and the existing presence of PG&E employees and contractors serving the area under baseline conditions, the workers needed for PG&E Components would be expected to be contributing to the existing demand for such services; however, even if all workers needed to construct, operate, and maintain the PG&E Components were new to the area, the resulting demand on fire protection, police protection, schools, parks, or other public facilities would not cause a need for new or physically altered governmental facilities. Regarding hazards and hazardous materials incidents that could cause a demand on fire or emergency response services, including as they may relate to electrical and other proposed equipment needed for the PG&E Components, see Section 3.10, *Hazards and Hazardous Materials*. Regarding wildfire considerations, including as they may relate to the proposed new 230 kV gen-tie line, see Section 3.20, *Wildfire*.

For these reasons, the PG&E Components would cause no impact to public services. (*No Impact*)

Mitigation: None required.

3.16.4 Cumulative Effects Analysis

As discussed in Section 3.16.3, *Direct and Indirect Effects*, the Heartland Solar Project and the PG&E Components would cause no impact with respect to the provision of new or physically altered fire or police protection, schools, parks, or other public service facilities. Therefore, the Project would not cause or contribute to any cumulative impact related to these services.

Mitigation: None required.

3.16.5 References

FCFPD (Fresno County Fire Protection District). 2022a. About Us.

FCFPD (Fresno County Fire Protection District). 2022b. *Fresno County Fire Protection District 2022 Annual Report.*

FCFPD (Fresno County Fire Protection District). 2023. Service Area.

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FCOE (Fresno County Office of Education). 2022a. Office of Education.

FCOE (Fresno County Office of Education). 2022b. Fresno County Schools Directory.

FCSO (Fresno County Sheriff's Office). 2019. 2019 Fresno County Sheriff's Office Annual Review.

FCSO (Fresno County Sheriff's Office). 2022a. Area 1.

FCSO (Fresno County Sheriff's Office). 2022b. Fresno County Sheriff's Department Area 1.

Fresno County. 2024. *Fresno County General Plan, Comprehensive General Plan Review and Revision.* Final. February 2024.

3.17 Recreation

This section identifies and evaluates considerations related to recreation resources, including the levels of use for existing parks or other recreational facilities and whether the Project proposes or would require the construction of new or expansion of existing recreational facilities where such improvements could have an adverse physical effect on the environment. The section identifies the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project). Fresno County (the County) received no scoping comments regarding Recreation (Appendix A, *Scoping Report*).

3.17.1 Setting

3.17.1.1 Study Area

The study area for the analysis of potential impacts to recreation includes the Project site and parks, open spaces, and other lands used for recreational purposes within 15-miles of the Project site.

3.17.1.2 Environmental Setting

Recreational opportunities within Fresno County include regional parks, city parks, state and national parks, national forests, wilderness areas, and other facilities. The majority of recreational resources are located within the eastern portion of the County (Fresno County 2000). The Mendota Wildlife Area, located approximately 3.5 miles to the northeast, is the closest recreational facility to the Project site. **Table 3.17-1** lists the parks and recreational facilities within an approximately 15-mile radius of the Project site.

TABLE 3.17-1
RECREATION FACILITIES NEAREST TO THE PROJECT SITE

Recreational Facility	Managing Agency	Approximate Distance from Project Site
Mendota Wildlife Area	CA Department of Fish and Wildlife	3.5 miles northeast
Alkali Sink Ecological Reserve	CA Department of Fish and Wildlife	10 miles northeast
Rojas Pierce Park	Mendota	10 miles north
Dunkle Park	Firebaugh	15 miles northwest
Three Rocks Fishing Access	Fresno County	8 miles south
Panoche Hills	Bureau of Land Management/CDFW	15 miles west
Mendota Pool Park	Mendota	12 miles north

SOURCES: CDFW 2022; Fresno County 2000; Fresno County Department of Public Works and Planning 2022; BLM 2022; City of Mendota 2022.

3.17.1.3 Regulatory Setting

Federal

No federal laws, regulations, plans, or policies are relevant to the County's consideration of the Project for purposes of the California Environmental Quality Act.

State

No state laws, regulations, plans, or policies are relevant to the County's consideration of the Project for purposes of the California Environmental Quality Act.

Local

Fresno County General Plan

The Fresno County General Plan *Open Space and Conservation Element* discusses policies to enhance recreational opportunities in the county by encouraging further development of public and private recreational opportunities. The following policies within Section H, *Parks and Recreation*, provides a quantitative goal for the provision of parkland (Fresno County 2024):

> **Goal OS-H:** To designate land for and promote the development and expansion of public and private recreational facilities to serve the needs of residents and visitors.
>
> > ***Policy OS-H.2: Park Standards.*** The County shall strive to maintain a standard of five (5) to eight (8) acres of County-owned improved parkland per one thousand (1,000) residents in the unincorporated areas.
> >
> > ***Policy OS-H.6: Centrally-located Parks.*** The County shall encourage the development of parks near public facilities such as schools, community halls, libraries, museums, prehistoric sites, and open space areas and shall encourage join-use agreements whenever possible.
> >
> > ***Policy OS-H.13: Western Recreation Facilities.*** The County shall encourage the development of recreation facilities in western Fresno County.

Fresno County Solar Facility Guidelines

Item 12 in the Fresno County Solar Facility Guidelines relates to recreation (Fresno County 2017). The guidelines recommend the following: "If the project is approved, the applicant shall make all reasonable efforts to conduct local recruitment efforts and/or coordinate with employment agencies in an attempt to hire from the local workforce." Consistency of the proposed solar facility with the County's Solar Facility Guidelines is analyzed in detail in Appendix I2.

3.17.2 Significance Criteria

The Project would result in significant impacts to recreation if it would:

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; or

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

3.17.3 Direct and Indirect Effects

3.17.3.1 Methodology

The Project's proposed location and components were reviewed relative to the location and capacity of parks and recreational facilities within an approximately 15-mile radius of the Project site to determine whether Project-caused changes would be significant.

3.17.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would 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.

The Heartland Solar Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. (*No Impact*)

There are no parks or existing recreational facilities located onsite that would be displaced and, thereby, cause related demand to be dispersed to other recreation facilities in the study area. As analyzed in Section 3.15, *Population and Housing*, the Project would not result in population growth or otherwise generate new residents that could increase demand for recreation resources in the study area. An average of 400 workers would be onsite for Project construction and decommissioning, with a maximum of 560 workers at the peak of construction, while operation and maintenance would require approximately three staff members typically to be onsite with crews of up to 10 workers as needed for equipment maintenance or replacement. For the reasons explained in Section 3.15, workers to construct and decommission the Project are expected to be hired from within Fresno County, consistent with the County's Guidelines for Solar Facility development. Thus, any demand for recreation resources by this group is occurring as part of the baseline condition and would not change as a result of the Project. Therefore, the workforce proposed to construct, operate, maintain, and decommission the proposed solar facility would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated.

Mitigation: None required.

Criterion b) Whether the Project would include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The Heartland Solar Project would not include recreational facilities or require the construction of new or expansion of existing recreational facilities so as to require construction that could have an adverse impact on the physical environment. No new recreation facilities are proposed as part of the Heartland Solar Project. No construction or new recreational resources and no expansion of existing recreational resources would be required as a result of the Heartland Solar Project

because, as analyzed in Section 3.15, *Population and Housing*, the Project would not result in population growth or otherwise generate new demand for recreation resources. (*No Impact*)

Mitigation: None required.

3.17.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

The PG&E Components would neither 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 nor would it include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. Thus, the PG&E Components would have no impact on recreation. No existing recreational facilities would be displaced, constructed, or require maintenance on an accelerated schedule as a result of the proposed work.

Mitigation: None required.

3.17.4 Cumulative Effects Analysis

Because the Heartland Solar Project and PG&E Components would result in no impact on recreation, the Project would not cause or contribute to a significant cumulative impact on recreation resources. (*No Impact*)

Mitigation: None required.

3.17.5 References

BLM (U.S. Bureau of Land Management). 2022. Panoche Hills.

CDFW (California Department of Fish and Wildlife). 2022. Mendota Wildlife Area.

City of Mendota. 2022. Community Profile.

Fresno County. 2017. *Solar Facility Guidelines*. December 12, 2017.

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000.

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Fresno County Department of Public Works and Planning. 2022. Parks and Access Facilities Map.

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3.18 Transportation

This section identifies and evaluates issues related to transportation, including the circulation system, vehicle miles traveled (VMT), road-related hazards, and emergency access. The section describes the physical and regulatory setting, criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project).

During the scoping period, Fresno County (County) received correspondence from the California Department of Transportation (Caltrans) stating that the agency did not have any scoping comments regarding the Project. This analysis is based in part on the *Transportation Impact Analysis* prepared by VRPA Technologies, Inc. in May 2023 (Appendix K). The preparers of this Draft Environmental Impact Report (EIR) independently reviewed the study and determined it to be suitable for reliance, in combination with other materials included in the formal record, in the preparation of this EIR.

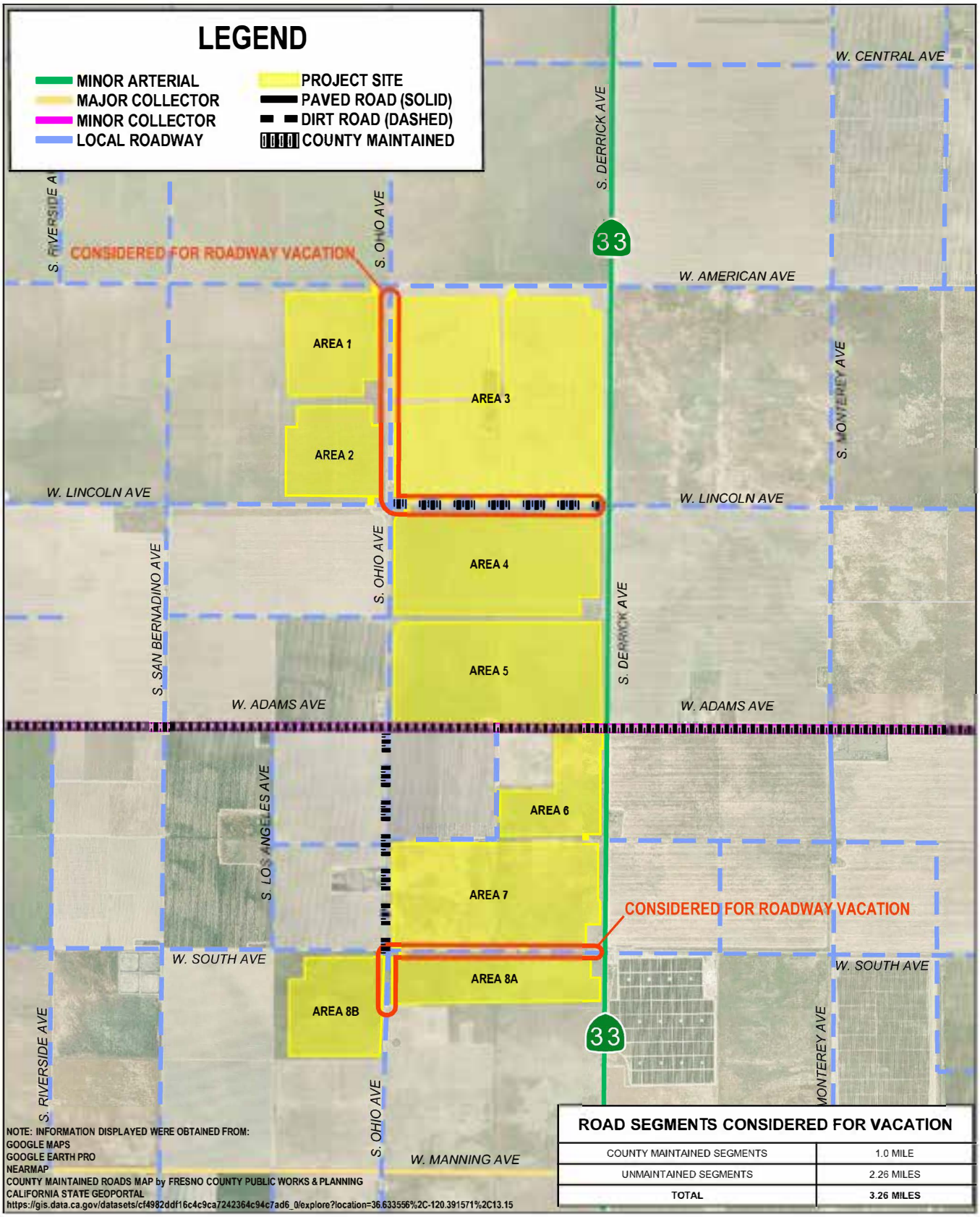
3.18.1 Setting

3.18.1.1 Study Area

Worker traffic (anticipated to be passenger cars) would approach the Project site on State Route (SR) 33 or W. Manning Avenue. From Interstate(I)-5, traffic would exit off I-5 at W. Manning Avenue and head east towards the Project site. Alternatively, traffic would exit off I-5 at SR 33 and head north towards the Project site.

Construction equipment and material deliveries would check in with the offload crew at the access points off W. Adams Avenue. Construction vehicle traffic would be required to approach the Project site from SR 33 then onto W. Adams Avenue and would be prohibited from traveling west of S. Ohio Avenue on W. Manning Avenue.

The study area for this analysis consists of the roadway segments and intersections that would be affected by Project trips, including for Project site access and the delivery or removal of goods, materials, and workers. Surrounding roadways or highways include, for example, SR 33 and W. Adams Avenue. The Project site is approximately 6 miles southwest of the City of Mendota, 10 miles east of I-5, to the east of S. San Bernardino and Los Angeles avenues, south of W. American Avenue, west of SR 33, 0.5 mile north of Manning Avenue, and 1.25 miles north of the Tranquillity Switching Station. The Heartland Solar Project site includes unmaintained County road easements within the Project site boundary that could be vacated as part of the Project, including two along S. Ohio Avenue, which runs north-south through the Heartland Solar Project site; one along W. Lincoln Avenue, where it separates Heartland Solar Project Area 3 and Area 4; and one along W. South Avenue, where it separates Heartland Solar Project Area 7 and Area 8a. See **Figure 3.18-1**, *Local Roadways*. In addition, the transportation study area includes pedestrian, bicycle, and transit facilities located on public roadways adjacent to the Project site (i.e., SR 33, W. Adams Avenue).



SOURCE: Tetra Tech

Heartland Solar Project

Figure 3.18-1
Local Roadways

ESA

3.18.1.2 Environmental Setting

Major Highways

SR 33 is a two-lane undivided highway that provides a connection between I-5 and the City of Mendota. Dedicated turn lanes are generally provided from SR 33 to nearby intersections. There are approximately 2 feet of paved and 5 feet of unpaved shoulder on either side of SR 33 in the vicinity of the Project site. According to the most recent data published by Caltrans, the average annual daily traffic (AADT) volume on SR 33 in the vicinity of the solar facility site is approximately 1,650 vehicles, with up to approximately 320 vehicles during the peak traffic hour (Caltrans 2020).

I-5 is a north-south interstate highway that extends from the Mexican border to the Canadian border and provides access for goods movement, shipping, and travel. Access to the Project site from I-5 is provided via an interchange at W. Manning Avenue. The AADT volume on I-5 near these interchanges is approximately 37,000 vehicles, with up to approximately 5,200 vehicles during the peak traffic hour (Caltrans 2020).

Local Roads

W. Adams Avenue is a two-lane undivided local roadway that provides a connection from the California Aqueduct (approximately 6.5 miles west of the Project site) to the intersection of W. Manning Avenue/James Road/South Calaveras Avenue. W. Adams Avenue provides access to the Project site and therefore would be used by all vehicles accessing the site. There are no dedicated left-turn lanes off SR 33 onto W. Adams Avenue. Peak hour volumes, which were collected for the Project in March 2023, are approximately 7 vehicles during the AM peak hour and 22 vehicles during the PM peak hour. The most recently available AADT on W. Adams Avenue in the vicinity of the Project site is approximately 187 vehicles (Dudek 2021).

W. Manning Avenue is a two-lane undivided major roadway that provides a connection from about 2.5 miles west of I-5 all the way to the City of Reedley approximately 50 miles east of the Project site. Similar to SR 33, there are approximately 2 feet of paved and 5 feet of unpaved shoulder on either side of W. Manning Avenue in the vicinity of the Project site. There are no dedicated turn lanes onto or off W. Manning Avenue in this area. W. Manning Avenue intersects with SR 33 to the south of the Project site. About 40 percent of vehicle trips generated by the Project would travel through this intersection to access the Project site. There are dedicated left-turn lanes off of SR 33 onto W. Manning Avenue. Average daily traffic volumes on W. Manning Avenue in the vicinity of the Project site is approximately 1,055 vehicles (Dudek 2021). Peak hour volumes, which were collected for the Project in March 2023, are approximately 95 vehicles during the AM peak hour and 115 vehicles during the PM peak hour (Appendix K). AADT information is not available for this roadway.

Public Transportation

The Fresno County Rural Transit Agency (FCRTA) provides passenger bus service between, and within, the rural communities of Fresno County. There are 13 fixed transit routes offered by the FCRTA, and reservation-based, demand responsive service offering curb-to-curb transportation is available in most communities. Westside Transit, a subsystem of FCRTA, provides scheduled

round trip intercity service between Firebaugh, Mendota, and Kerman to the Fresno-Clovis Metropolitan Area, Monday through Friday from 7:00 a.m. to 5:30 p.m. (FCRTA 2018). The nearest bus stops to the site are located on Oller Street in Mendota, approximately 9 miles north of the Project site.

Non-Motorized Transportation

There are no dedicated pedestrian or bicycle facilities in the immediate vicinity of the Project site or along the surrounding roadways or highways, including SR 33 or W. Adams Avenue. There also are no planned bicycle or pedestrian facilities near the Project site (Fresno Council of Governments [FCOG] 2018).

3.18.1.3 Regulatory Setting

State

Caltrans

Caltrans has jurisdiction over state highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways. State highways in Fresno County are under the jurisdiction of Caltrans District 6. The following Caltrans regulations apply to potential transportation and traffic impacts of the Project:

California Vehicle Code (CVC), Division 15, Chapters 1 through 5 (Size, Weight, and Load). Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.

California Street and Highway Code, Sections 660-711, 670-695. Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery, includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits, and requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.

Local

Fresno County General Plan

The Transportation and Circulation Element of the County General Plan provides the framework for Fresno County decisions concerning the Countywide 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 FCOG, and with state and federal agencies that fund and manage transportation facilities within the County. This element of the General Plan sets out goals, policies, and programs related to transportation and circulation (Fresno County 2024). The following transportation-related policies are relevant to the Project:

Policy TR-A.2: Vehicle Miles Traveled (VMT) Standards and CEQA Evaluation. The County shall require evaluation of County General Plan land use designation changes, zone changes, and discretionary development for their individual (i.e., project-specific) and cumulative transportation impacts based on VMT under the California Environmental Quality Act (CEQA) pursuant to the methodology and thresholds of significance criteria established by the County.

Policy TR-A.25: Vehicle Miles Traveled (VMT) Threshold. Projects that would generate or attract more than 110 daily vehicle trips shall be evaluated for a transportation VMT impact on an individual basis. The threshold of significance shall be 87 percent below the countywide average rate of VMT. Any individual project resulting in VMT that exceeds 87 percent below the countywide average shall be required to implement project-specific mitigation measures aimed at reducing VMT generated by the project.

Policy TR-A.3: Level of Service. The County shall plan and design its roadway system in a manner that strives to meet Level of Service (LOS) D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the County.

Policy TR-A.4: Roadway Access. 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.6: Rights-of-way Dedications. 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.9: Development Impact Fee. The County shall assess fees on new development sufficient to cover the fair share portion of that development's impacts on the local and regional transportation system.

Policy TR-A.10: Roadway Improvements. 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.

Policy TR-A.14: Multi-modal Transportation System. The County where appropriate, shall coordinate the multi-modal use of the streets and highways to ensure their maximum efficiency and connectivity and shall consider the need for transit, bikeway, and recreational trail facilities when establishing the Ultimate Right-of-way Plan and Precise Plans of street and highways.

Fresno County Regional Active Transportation Plan

The FCOG adopted the Fresno County Regional Active Transportation Plan on February 22, 2018. The Active Transportation Plan is a comprehensive guide outlining the vision for biking, walking, and other human-powered transportation in Fresno County and a roadmap for achieving that vision. The Active Transportation Plan proposes a comprehensive network of countywide bikeways trails, and sidewalks; crossing improvements at key intersections; and locations for recommended bicycle parking. At build out, the recommended network would add 248 miles of Class I Bikeways (bike paths), 1,591 miles of Class II Bikeways (bike lanes), 59 miles of Class III Bikeways (bike routes), 11 miles of Class IV Separated Bikeways, and 89 miles of

sidewalks. Build-out of the plan would also improve 80 intersections and street crossings for pedestrians and add 175 bicycle parking locations (FCOG 2018). This plan meets all requirements for active transportation plans as specified by the California Transportation Commission's 2017 Active Transportation Plan Guidelines.

Fresno Council of Governments Regional Transportation Plan

The 2022 Regional Transportation Plan (RTP) was prepared by the FCOG and adopted in July 2022. The RTP is a blueprint that establishes a set of regional transportation goals, policies, and actions intended 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 local, regional, state, and federal agencies. Additionally, the RTP establishes a basis on which funding applications are evaluated. Use of any state or federal transportation funds by local governments must conform to the RTP, the State Implementation Plan for air quality improvements, and the Federal Transportation Improvement Programs. The FCOG prepared the 2022 RTP to include a Sustainable Communities Strategy, which is intended to show how integrated land use and transportation planning can lead to lower greenhouse gas (GHG) emissions from automobiles and light trucks. The Sustainable Communities Strategy is required by Senate Bill 375, which went into effect in 2009 (FCOG 2022).

Fresno Council of Governments Congestion Management Process

All urbanized areas with a population larger than 200,000 people are required to have a Congestion Management System, Program, or Process. The FCOG refers to its congestion management activities as the Congestion Management Process (CMP). The 2009 Fresno County CMP was designed to meet the federal requirement under Title 23 of the Code of Federal Regulations sections 500.109 and 450.320. The 2017 CMP is an update to the 2009 CMP based on emerging transportation planning practices such as the transportation performance measurement required under the Moving Ahead for Progress in the 21st Century Act and the Fixing America's Surface Transportation Act (FCOG 2017).

The CMP is a systematic process for managing congestion that provides information on: (1) transportation system performance, and (2) alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The purpose of the CMP is to help ensure that a balanced transportation system is developed that relates population growth, traffic growth, and land use decisions to transportation system level of service (LOS) performance standards and air quality improvement. The CMP is an effort to more directly link land use, air quality, transportation and the use of new advanced transportation technologies as an integral and complementary part of the region's plans and programs. The purpose of defining the CMP network is to establish a system of roadways that will be monitored in relation to established LOS standards. At a minimum, all state highways (e.g., SR 33) and principal arterials must be designated as part of the Congestion Management System of Highways and Roadways.

As described above, CEQA Guidelines section 15064.3(b) requires CEQA lead agencies to evaluate transportation impacts based on a VMT approach and confirms that vehicle delay and LOS are no longer an appropriate methodology to determine the significance of a transportation impact for purposes of CEQA. Because the CMP is solely focused on vehicle delay and LOS

transportation metrics, it is not the focus of the analysis of transportation impacts in this EIR. See Section 3.18.3.1, *Methodology*, for additional details about VMT.

3.18.2 Significance Criteria

The Project would result in significant impacts to transportation 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 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 uses (e.g., farm equipment);

d) Result in inadequate emergency access.

3.18.3 Direct and Indirect Effects

3.18.3.1 Methodology

Trip Generation

Trip generation for Project construction is shown below in **Table 3.18-1**. Trip generation for decommissioning would be similar to Project construction. Detailed trip generation for the Project was developed based on planning and scheduling of the construction activities as well as the Applicant's experience with construction and operation of solar facilities similar to the Project. For the purposes of CEQA, the values shown in the table provide a conservative scenario in that they represent the maximum level of construction activity that could occur if the originally proposed (and now withdrawn) hydrogen generation facility and the proposed solar generation and energy storage facility were to be constructed concurrently. Because Project approval, if it occurs, would result in transportation impacts only from the solar and energy storage facility and not from a hydrogen generation facility on the Project site, the trip generation numbers considered in this analysis over-represent the amount of vehicle trips that could result. The trip generation assumes a passenger car equivalent (PCE) of 3.0 for the large trucks associated with construction activities. PCEs account for differences between trucks and passenger vehicles (i.e., trucks utilize more roadway capacity than passenger vehicles due to their larger size, slower start-up times, and reduced maneuverability). The determination of AM and PM peak hour trips for trucks and autos was based on the General Light Industrial category (Land Use Code 110) from the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition).

Once constructed, the Project would operate 7 days per week and 365 days per year. Except for security personnel (who would be onsite up to 24 hours per day, 7 days per week), solar facility operations and maintenance staff typically would work during regular business hours (e.g., between 8:00 a.m. and 6:00 p.m.) Monday through Friday. Approximately three staff members typically would be onsite to conduct periodic, routine visual inspections and minor repairs. Larger crews of up to 10 workers would be required to perform other tasks such as equipment maintenance or replacement. Non-routine (emergency) maintenance or major repairs could require additional workers and could require work to occur during evening or nighttime hours when the solar facility

is not generating power. Based on the minimal number of workers needed to conduct Project operations and maintenance, vehicle trips generated by these workers would be minimal, and the impact to peak hour traffic would be less than significant.

TABLE 3.18-1
TRIP GENERATION FOR PROJECT CONSTRUCTION

	Daily			Trip Generation				PCE Trip Generation			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Workers	Trucks	ADT (PCE)	in	out	in	out	in	out	in	out
Peak Construction Traffic	455	65	1,105	197	41	47	165	203	43	49	167

NOTES: ADT = average daily traffic; PCE = passenger car equivalents.
SOURCE: VRPA Technologies, Inc., 2023 (Appendix K).

Trip Distribution

The Project traffic distribution was estimated based on an analysis of potential origins and destinations of construction traffic and prevailing traffic patterns. The following construction trip distribution percentages were assumed:

- 10 percent of construction traffic would travel to/from the west via Manning Avenue;
- 10 percent of construction traffic would travel to/from the east via Manning Avenue;
- 20 percent of construction traffic would travel to/from the south via SR 33; and
- 60 percent of construction traffic would travel to/from the north via SR 33.

Vehicle Miles Traveled

CEQA Guidelines section 15064.3(b) directs CEQA lead agencies to focus their transportation impacts analyses primarily on projects within transit priority areas and shift the focus from driver delay to reduction of GHG emissions, creation of multimodal networks, and promotion of a mix of land uses. CEQA Guidelines section 15064.3(b) requires lead agencies to evaluate transportation impacts based on VMT (and no longer on LOS) beginning July 1, 2020. VMT is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person. The County has not yet adopted or put into practice its own VMT-based transportation significance thresholds. Where no VMT thresholds have yet been adopted, the Office of Planning and Research's (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018) provides guidance:

> *"The VMT metric can support the three statutory goals: "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Pub. Resources Code, § 21099, subd. (b)(1), emphasis added.) However, in order for it to promote and support all three, lead agencies should select a significance threshold that aligns with state law on all three. State law concerning the development of multimodal transportation networks and diversity of land uses requires planning for and prioritizing increases in complete streets and infill development but does not mandate a particular depth of implementation that could translate into a particular threshold of significance.*

> *Meanwhile, the State has clear quantitative targets for GHG emissions reduction set forth in law and based on scientific consensus, and the depth of VMT reduction needed to achieve those targets has been quantified. Tying VMT thresholds to GHG reduction also supports the two other statutory goals. Therefore, to ensure adequate analysis of transportation impacts, OPR recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so."*

In addition to the statewide guidance provided above by OPR, the FCOG has also provided recommendations regarding the analysis of VMT to serve its 16 member jurisdictions (FCOG 2020). The local governments can take the recommendations in the FCOG Regional Guidelines as appropriate based on their individual circumstances, such as growth policies and economic development goals. The FCOG guidance addresses the following elements:

- Context for VMT analysis.
- Project screening.
- VMT significance thresholds and VMT analysis for land use development projects, transportation projects, and land use plans.
- Feasible mitigation strategies applicable for the Fresno region.

3.18.3.2 Direct and Indirect Effects of the Project

Criterion a) Whether the Project would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

Transit, Bicycle, and Pedestrian Facilities

The Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. (*No Impact*)

Fresno County's General Plan includes policies regarding access and safety standards of roadway facilities, bike facilities, and public transit. Although the General Plan seeks to coordinate multiple forms of transportation, including cars, commercial vehicles, buses, transit, bicycles, and pedestrian traffic, the General Plan does not contain specific policies governing pedestrian traffic. In addition, the following two plans have been adopted to address non-motorized transportation systems and identify barriers to trails and bikeways: the Regional Bicycle and Recreational Trails Master Plan (Fresno County 2013), and the Fresno County Regional Active Transportation Plan (FCOG 2018). The Project is consistent with the General Plan policies, the Regional Bicycle and Trails Master Plan, and the Fresno County Regional Active Transportation Plan because there is no public transportation service or dedicated pedestrian or bicycle facilities on roadways that would be used to access the Project site, and because neither SR 33, nor other roadways that would be traveled by Project traffic are listed within the Fresno County General Plan Transportation and Circulation Element as an "existing or planned bikeway." Similarly, the Project site would not introduce a barrier to non-motorized travel due to the proposed lack of roadway improvements. Therefore, the Project would not conflict with adopted policies, plans, or programs supporting

alternative transportation. The Project also would not decrease the performance or safety of public transit, bicycle, or pedestrian facilities because there are no facilities in the affected area. Therefore, the Project would cause no impact related to these considerations.

Mitigation: None required.

Consistency with General Plan Policies TR-A.2 and TR-A.25

Regarding General Plan Policies TR-A.2 and TR-A.25, both regarding VMT, see the analysis of criterion b), below.

Impact 3.18-1: The Heartland Solar Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway facilities. (*Less than Significant with Mitigation Incorporated*)

Consistency with General Plan Policy TR-A.3

The Transportation and Circulation Element of the County's General Plan includes Policy TR-A.3 regarding LOS. LOS is a qualitative description of a roadway's or intersection's performance based on the average delay conditions experienced by motorists. A roadway or intersection with light traffic and few significant backups is assigned a grade of "A." As congestion worsens, the letters progress. For example, a grade of LOS "E" or "F" signals severe traffic congestion. Policy TR-A.3 says, "The County shall plan and design its roadway system in a manner that strives to meet [LOS] D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the County."

Although CEQA analyses of transportation impacts commonly used to evaluate project-caused changes to LOS as a metric, the California Natural Resources Agency changed that when it adopted CEQA Guidelines section 15064.3 on December 28, 2018. CEQA Guidelines section 15064.3(b) requires lead agencies to evaluate transportation impacts based on a VMT approach and confirms that vehicle delay and LOS are no longer an appropriate methodology to determine the significance of a transportation impact for purposes of CEQA. Nonetheless, the Project's potential impact on LOS is evaluated here in the context of whether the Project would conflict with a policy addressing the circulation system. Regarding the Project's consistency with the County General Plan as a whole, see Section 3.12, *Land Use and Planning*, and Appendix I1, *Consistency with Fresno County General Plan*. See also the Transportation Impact Analysis prepared for the Project (Appendix K), which contains additional details about delay and LOS in the timeframes and locations that would be most affected by Project traffic, i.e., during construction at the following three intersections: SR 33 and Adams Avenue, SR 33 and Manning Avenue, and Adams Avenue at the point of Project access.

The Transportation Impact Analysis (Appendix K) evaluated a worst-case traffic scenario that assumed concurrent construction of both the solar and previously-proposed hydrogen facilities. Given that the hydrogen facilities are no longer under consideration, this approach conservatively accounts for more impacts to the circulation system than could occur if the Project were approved.

Project construction would be short-term and, under this scenario, would occur for approximately 14 months with peak activities during Month 4. Construction traffic would result in short-term

increases in traffic volumes on study area roadways. The analysis considers whether the addition of Project-related construction vehicle traffic to existing roadway volumes without a corresponding increase in the capacity of the roadway could increase congestion and delay for vehicles in a manner that results in conditions worse than LOS C. This could occur if, for example, construction truck traffic reduced roadway capacities below LOC C due to the slower travel speeds and larger turning radii of trucks.

Assessment of the short-term effect that Project construction traffic could have on local and regional roads is based on the following: (1) review of existing traffic volume information and, (2) consideration of both the percentage increase the Project construction traffic would contribute over existing conditions and the capacity of the road to handle the additional traffic. Because the number of vehicles on roads varies day-to-day and routinely fluctuates plus or minus 10 percent, a change in traffic volume of 10 percent or less is generally not perceptible to the average motorist. Traffic volumes on Project area roads are typically highest during morning and evening peak commute hours (generally between 6:00 a.m. to 8:00 a.m., and 3:30 p.m. to 5:30 p.m. in rural Fresno County); traffic increases that occur during these peak periods may exacerbate short-term congestion.

As shown in **Table 3.18-2**, average daily traffic on study area roadways would increase by as little as 3 percent (I-5) and by nearly seven-fold more (W. Adams Avenue adjacent to the Project site) during the peak of Project construction activities. Increases in ADT would be smaller for the remaining construction duration. The magnitude of increases on I-5 and SR 33 near the City of Mendota are within the range of typical daily variation in traffic levels (usually on the order of ±10 percent) that might be expected on the major roadways serving the Project site, and transportation conditions would remain substantially similar to current conditions. On W. Adams Avenue, W. Manning Avenue, and SR 33 near the Project site, however, the magnitude of increases in traffic volume (greater than the above-cited ±10 percent typical daily variation in traffic levels) would be noticeable to the average motorist. However, based on the capacity of undivided two-lane roadways (approximately 2,800 vehicles per hour per lane) and the volumes shown in Table 3.18-2, the daily traffic capacity of W. Adams Avenue, W. Manning Avenue, and SR 33, are adequate to accommodate the projected increase in traffic (Transportation Research Board 2020).

TABLE 3.18-2
AVERAGE DAILY TRAFFIC DURING PEAK OF PROJECT CONSTRUCTION

Roadway	Existing ADT	Project Traffic ADT	Percent Increase ADT
SR 33 near MWWTP	12,400	663	5.3%
SR 33 north of Project site	1,650	663	40.2%
SR 33 south of Project site	1,650	442	26.8%
I-5	37,000	1,105	3.0%
W. Manning Avenue	1,055	111	10.5%
W. Adams Avenue	187	1,105	> 100%

NOTES: ADT = average daily traffic
SOURCES: VRPA 2023 (Appendix K); Caltrans 2021.

While the increase in traffic volume on SR 33, W. Manning Avenue, and W. Adams Avenue would be noticeable to motorists who regularly travel along these roadways, there would be sufficient capacity to accommodate the added traffic during the construction period without a reduction in LOS that would be inconsistent with General Plan Policy TR-A.3. However, it is expected that most construction-related traffic would occur during commute hours when construction workers are traveling to and from the Project site, resulting in a potential significant impact due to congestion on the affected roadways. Implementation of **Mitigation Measure 3.18-1: Construction and Decommissioning Traffic Management Plan** would reduce the impact of Project construction traffic on study area roadways during peak commute hours to a less-than-significant level.

The Heartland Solar Project's decommissioning impacts would be relatively similar to those identified for construction of the Project and, accordingly, also would result in a less-than-significant impact with respect to study area roadway congestion and LOS. Therefore, Project decommissioning would have a less-than-significant impact with mitigation incorporated relating to General Plan Policy TR-A.3 and significance criterion a).

The Heartland Solar Project would cause a less-than-significant impact relating to criterion a) during the operation and maintenance period. Operations and maintenance activities would occur over a 30-year period. As stated previously, approximately three staff members typically would be onsite to conduct periodic, routine visual inspections and minor repairs. Larger crews of up to 10 workers would be required to perform other tasks such as equipment maintenance or replacement. Non-routine (emergency) maintenance or major repairs could require additional workers. Operation and maintenance of the Project would require the use of vehicles and equipment including crane trucks for major equipment maintenance. A portion of these would utilize public roadways. The addition of a small number of vehicles to the roadway network would not have a discernable effect on roadway operations. As such, Project operation and maintenance activities would have a less-than-significant impact relating to General Plan Policy TR-A.3 and significance criterion a).

Consistency with Other General Plan Policies Addressing the Circulation System, including Roadway Facilities

As explained in Appendix I1, *Consistency with Fresno County General Plan*, the Heartland Solar Project otherwise would be consistent with the remaining General Plan Policies summarized in Section 3.18.1.3, *Regulatory Setting*.

Consistency with General Plan Policy TR-A.10

General Plan Policy TR-A.10 (Roadway Improvements) requires the County to ensure that land development that affects roadway use or operation or that requires roadway access to plan, dedicate, and construct required improvements consistent with the criteria in the County's Circulation Diagram and Standards. Consistent with developing County practice, County decision-makers are expected to exercise their discretion consistent with Policy TR-A.10 separate from the CEQA process and this EIR by requiring the Applicant to improve the segment of W. Adams Avenue between the Project site and SR 33 consistent with the Circulation Diagram

and Standards section of the Transportation and Circulation Element of the County General Plan. This analysis assumes that the condition of approval would be substantially similar to this:

> *After final delivery of main equipment and prior to the later to occur of (a) the closing of the final project permit or (b) the start of operations of the Project, other than testing processes of the facilities, the Applicant shall crack seal & chip seal for a distance approximately 0.3-mile along W. Adams Avenue between the Project site driveway and SR 33. Prior to the chip seal application, the full pavement width at the construction entrance shall be grinded to a depth of 0.3 feet and replaced with hot mixed asphalt.*

With this or another requirement to ensure that the County acts consistent with the purpose of General Plan Policy TR-A.10, the Project would result in a less-than-significant impact relating to consistency with General Plan Policy TR-A.10 and CEQA significance criterion a).

Mitigation: Implement Mitigation Measure 3.18-1: Construction and Decommissioning Traffic Management Plan

Prior to the issuance of construction or building permits and the issuance of decommissioning authorizations, the Project owner and/or its construction contractor shall prepare and submit a Traffic Management Plan to the Fresno County Public Works Department and the California Department of Transportation, District 6, as appropriate, for approval. The Traffic Management Plan must be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and must include, but not be limited to, the following elements:

- Temporary Traffic Control plan that addresses traffic safety and control through the work zone, including during temporary lane closures (if needed) to accommodate materials delivery, transmission line stringing activities, or any other utility connections;
- Identify the timing of deliveries of heavy equipment and building materials;
- Requirement for designated construction staff to be assigned as flaggers to direct traffic into and/or through temporary traffic control zones, as needed;
- Requirement to place temporary signage, lighting, and traffic control devices, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic;
- Ensure access for emergency vehicles to the Project site;
- Access to adjacent properties shall be maintained;
- Specify both construction/decommissioning-related vehicle travel and oversize load haul routes, minimizing construction/decommissioning traffic during the AM and PM peak hour, distributing construction/decommissioning traffic flow across alternative routes to access the Project site, and avoiding residential neighborhoods to the maximum extent feasible.
- Requirement to obtain all necessary permits for the work within the road right of way or use of oversized/overweight vehicles that would utilize County-maintained roads, which may require California Highway Patrol or a pilot car escort. Copies of the

approved traffic plan and issued permits shall be submitted to the Fresno County Divisions of Public Works and Planning.

- Applicant shall coordinate with Fresno County to assess potential impacts to County roads from Project-related activities. If any County roads are demonstrably damaged as a result of the Project, the Applicant shall work with Fresno County to determine appropriate repairs, which may include paving, slurry-sealing, or reconstruction, as required by state and/or County standards.

The Traffic Management Plan elements listed above would reduce the potentially significant effects of short-term and intermittent construction-related congestion caused by construction vehicles/equipment on local roadways.

Significance after Mitigation: Less than significant. Heartland Solar Project construction would result in a less-than-significant impact on intersection capacity because near-term plus Project construction traffic would not operate at or worse than the General Plan policy's target level of service. Stated another way, near-term plus Heartland Solar Project construction traffic would operate at LOS C at SR 33 and Adams Avenue and at LOS B at both SR 33 and Manning Avenue, and at Adams Avenue at the point of Project access. Accordingly, even when contributing the most traffic to area roadways (i.e., during construction), the Heartland Solar Project would be consistent with County General Plan Policy TR-A.3. The implementation of Mitigation Measure 3.18-1 would further reduce impacts because vehicle access on roadways adjacent to the Project site would be safely maintained and delays caused by additional Project-related traffic would be minimized, with an emphasis on peak hour conditions when roadway volumes are highest. Project-caused construction traffic would cause a less-than-significant impact relating to General Plan Policy TR-A.3 and significance criterion a).

Criterion b) Whether the Project would conflict or be inconsistent with CEQA Guidelines section 15064.3(b).

Impact 3.18-2: The Heartland Solar Project would not conflict or be inconsistent with CEQA Guidelines section 15064.3(b). (*Less-than-Significant Impact*)

Fresno County has not yet adopted thresholds of significance for VMT. Because no quantitative, qualitative, or performance level is identified, guidance criteria from OPR's Technical Advisory was considered for this evaluation. OPR's Technical Advisory provides guidance for the evaluation of a project's VMT impact using the following criteria: "The reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." The "development of multimodal transportation networks" criterion does not apply to the Project, as the Project is a land use and not a transportation project. As discussed below, the Project would result in a less-than-significant impact with respect to VMT based on the guidance provided by the OPR Technical Advisory.

Reduction of Greenhouse Gas Emissions

The Project would provide clean renewable energy throughout the Project's useful life, which is expected to be approximately 30 years. Additionally, Section 3.9, *Greenhouse Gas Emissions*, identifies less-than-significant impacts for construction-related and operational emissions

(decommissioning emissions would be similar in scale to construction emissions). San Joaquin Valley Air Pollution Control District's *Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA* does not provide a quantitative GHG threshold, but it does support the use of the California Air Pollution Control Officers Association's recommended interim threshold. The GHG analysis for the Project identified a quantitative threshold of significance for GHG emissions consistent with the California Air Pollution Control Officers Association's interim threshold guidance. The analysis accounted for construction traffic emissions to determine the total emissions for the Project. Using this definitive quantitative metric yielded a less-than-significant impact. Based on this conclusion, a threshold value for VMT would likely be much higher than the Project-generated VMT. This assertion is in line with the fact that the guidance for conducting VMT analysis originated with GHG emissions reduction regulations and goals and the guidance states, "OPR recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so."

Diversity of Land Use

Diversity of land use is a much more difficult criterion to quantify for a comparative analysis; however, the Project would expand land use diversity in the study area. During the period of the use permit, this Project would change the land use at the Project site from undeveloped, underperforming agricultural land to renewable energy generation. Because the Project would generate renewable (carbon neutral) energy, the solar facility would directly contribute to compliance with laws and policies toward achieving nationwide and statewide goals, the VMT generated by the Project is considered less than significant.

OPR Screening Criterion

Per CEQA Guidelines Section 15064.3(b)(3), a qualitative VMT analysis of construction trips is appropriate. Further, per OPR's guidelines, heavy vehicle traffic is not required to be included in the estimation of a project's VMT. Construction truck trips would be temporary and only in volumes necessary to deliver equipment and materials to the site. Upon completion of construction, all truck trips and worker commute trips related to construction would stop. At this time, there are no known applicable VMT thresholds of significance for temporary construction trips that may indicate a significant impact. Project construction would be consistent with typical construction activities in terms of the temporary nature of activities, trip generation characteristics, and the types of vehicles and equipment required. While worker and vendor trips would generate VMT, once construction is completed, the construction-related traffic would cease and VMT would return to pre-construction conditions. Therefore, Heartland Solar Project construction would have a less-than-significant impact relative to VMT.

The Project would not generate enough operational traffic to trigger a significant VMT impact according to the OPR's Technical Advisory. According to OPR's Technical Advisory, any project generating less than 110 trips per day can be presumed to have a less than significant impact on VMT. Once construction is completed, traffic levels associated with operation of the Project would be low. During regular operations, the proposed solar generation and energy storage facility would employ three people on a typical day. These three employees would be expected to generate six daily trips, which is well below the 110 trips-per-day VMT screening

threshold. Therefore, the Project would result in a less-than-significant impact with respect to VMT and would be consistent with CEQA Guidelines section 15064.3(b)

Mitigation: None required.

Criterion 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 3.18-3: The Heartland Solar Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (*Less-than-Significant Impact*)

Construction of the Project would require the delivery of heavy construction equipment and facility materials, some of which may require transport by oversize vehicles. The use of oversize vehicles during construction can create a hazard to the public by limiting motorist views on roadways and by the obstruction of space. Construction-related oversize 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 oversize load permits. Due to the rural nature of the study area roads and relatively low traffic volumes, construction vehicles are not anticipated to cause hazards to other roadway users traveling to and from any of the facility locations that comprise the Project site. Furthermore, the Project would not include a design feature or utilize vehicles with incompatible uses that would create a hazard on surrounding roadways.

Access to the Project site would be provided from W. Adams Avenue. All access points would be required to conform with Fresno County standards (per General Plan Policies TR-A.3, TR-A.5, and TR-A.8), ensuring that corner sight distance requirements are followed, although the flat terrain is assumed to not make sight distance an issue of concern. These design and construction requirements would ensure that Project elements would not increase transportation-related hazards. The Project also would be subject to the requirements of the current Fire Code and Building Code, and Project plans would be reviewed by the Fresno County Fire Protection District (FCFPD) for appropriate access design prior to the issuance of building permits. Impacts associated with transportation-related hazards resulting from a Project geometric design feature or incompatible uses would be less than significant.

Mitigation: None required.

Criterion d) Whether the Project would result in inadequate emergency access.

Impact 3.18-4: The Heartland Solar Project could result in inadequate emergency access. (*Less than Significant with Mitigation Incorporated*)

The Project site is located in a rural area with multiple potential access roads allowing adequate egress/ingress to the proposed solar facility in the event of an emergency. If the Project is approved, currently unmaintained County roadway easements could be vacated. These segments are not part

of the improved roadway system used under baseline conditions and so vacation of the segments would not affect the adequacy of existing emergency access. In an emergency, emergency access to, from, and within the Project site would be maintained.

Solar facility driveways also would be paved and a minimum of 24 feet wide. Driveway design characteristics such as corner sight distance and approach and departure tapers would follow County encroachment permit requirements. Additionally, as part of the Project, interior roadways within the solar facility would be up to 20-feet wide and constructed of compacted native soil. Therefore, the Project would allow for adequate emergency access to, from, and within the Project site. The Project also would be subject to the requirements of the current Fire Code and Building Code, and Project plans would be reviewed by the FCFPD for appropriate access design prior to the issuance of building permits.

As described above under Impact 3.18-1, increased Project-related operational traffic would not result in a substantial change to operating conditions on study area roadways. Furthermore, the Project would not require lengthy or repeated closures of public roads that could inhibit access by emergency vehicles. During site clearing and construction of the Project, heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures in the event of an emergency (e.g., slowing vehicles traveling behind the truck). However, **Mitigation Measure 3.18-1** would reduce this impact to a less-than-significant level because vehicle access on roadways adjacent to the Project site would be safely maintained.

Mitigation: Implement Mitigation Measure 3.18-1.

Significance after Mitigation: Less than significant

3.18.3.3 Direct and Indirect Effects of the PG&E Components

Impact 3.18-5: Construction, operation and maintenance of the PG&E Components could affect transportation. (*Less-than-Significant Impact*)

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Work needed for the PG&E Components would not be subject to the County's land use programs, plans, ordinances, or policies addressing the circulation system, and so would result in no impact regarding criterion a). As discussed in Section 3.12, *Land Use and Planning*, PG&E is an investor-owned public utility subject to the jurisdiction of the California Public Utilities Commission and not subject to the County's discretionary land use approval requirements.

Because the County's land use programs, plans, ordinances, or policies do not apply to the PG&E Components, the PG&E Components would cause no impact under criterion a). (*No Impact*).

The PG&E Components would not conflict or be inconsistent with CEQA Guidelines section 15064.3(b). OPR's Technical Advisory provides guidance for the evaluation of a project's VMT impact using the following criteria: "The reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." Regarding the reduction of greenhouse gas emissions, Section 3.9, *Greenhouse Gas Emissions*, identifies less-than-significant impacts for construction-related and operational emissions. Further, the purpose of the PG&E Components is to interconnect a renewable energy generation project that would generate reduced GHG emissions relative to a comparable amount of fossil fuel-generated power. The "development of multimodal transportation networks" criterion does not apply to the PG&E Components because the PG&E Components are not a transportation project. The PG&E Components would require negligible trips during construction of the electrical infrastructure improvements and would not generate vehicle trips over baseline levels during operation and maintenance. Therefore, the PG&E Components would result in a less-than-significant impact with respect to VMT based on the guidance provided by the OPR Technical Advisory. (*Less-than-Significant Impact*)

The PG&E Components would not substantially increase hazards due to a geometric design feature or incompatible uses. Necessary work would not introduce sharp curves or affect intersection safety and energy uses already are prevalent in the area – the introduction of vehicles and equipment needed to construct, operate, and maintain the gen-tie line, ancillary equipment within or beyond the existing Tranquillity Switching Station footprint would be compatible with existing power lines and equipment in the study area. (*Less-than-Significant Impact*)

The PG&E Components also would not result in inadequate emergency access. The PG&E Components site is located in a rural area with an established road network that provides adequate egress/ingress to and through the area in the event of an emergency. Further, the PG&E Components would not require lengthy or repeated closures of public roads that could inhibit access by emergency vehicles. (*Less-than-Significant Impact*)

Mitigation: None required.

3.18.4 Cumulative Effects Analysis

3.18.4.1 Cumulative Effects of the Heartland Solar Project

Criterion a)

As analyzed in Section 3.18.3, *Direct and Indirect Effects*, the Heartland Solar Project would result in no impact due to a conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Because the Project would have no impact, it could not cause or contribute to any cumulative impact relative to criterion a). (*No Impact*)

Mitigation: None required.

Impact 3.18-1c: The Heartland Solar Project could cause a cumulatively considerable contribution to a significant cumulative effect due to a conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway facilities. (*Less than Significant with Mitigation Incorporated*)

The Project's incremental, less-than-significant impact due to a conflict with General Plan policies could combine with the similar incremental impacts of the projects identified in Section 3.1.3, *Cumulative Effects Approach*, in Section 3.1, *Introduction to Environmental Analysis*, commencing when Project vehicles begin traversing study area roadways and concluding when onsite work necessary for decommissioning and site reclamation is complete. Other projects that would generate traffic that could affect conditions along SR 33, W. Adams and W. Manning during this time period include the relatively low levels of operation and maintenance-related vehicles supporting the Tranquillity Solar Project and PG&E's activities at the Tranquillity Switching Station, and the Adams East solar project. The trips from these past projects are evaluated in this analysis as part of the baseline condition. Other present and reasonably foreseeable future projects that would generate construction, operation and maintenance traffic that could affect conditions along SR 33, W. Adams or W. Manning during this time period include the Scarlet and Luna Valley solar projects, which were approved but not yet built as of the NOP for this Project, and the Sonrisa Solar Project, which is currently under consideration by the County.

- The Scarlet Solar Project would require up to a total of 132 to 974 workers (i.e., up to 1,948 daily one-way trips) during the 18-month construction and decommissioning periods and 8 workers (up to 16 daily one-way trips) during the operation and maintenance phase. Site access could be provided via W. South, W. Manning, and/or W. Dinuba avenues to the east of SR 33, away from the Heartland Project site. Direct access to the Scarlet Solar Project site from SR 33 is not anticipated. (Fresno County 2021a)

- For the Luna Valley Solar Project, an average of 866 trips (1,732 daily one-way trips) over the 16-month construction and decommissioning periods and a maximum of 20 workers (representing 40 daily one-way trips) if needed for a major maintenance event during the 40--year operations period. Access to the site would be provided from SR 33 and W. Manning Avenue. (Fresno County 2021b).

- The Sonrisa Solar Project is estimated to require a maximum of 350 workers and 72 vendor trucks over the 14-month construction and decommissioning phases; on a typical day, the number of onsite staff could range from none (since is not necessary for staff to be present during facility operations) to 30 during maintenance events (Dudek 2021). Because Sonrisa Solar Project site access would be provided from W. Manning Avenue and from W. Adams Avenue at Monterey, vehicles would be traveling north or south along SR 33 and then turn onto W. Manning and W. Adams avenues across SR 33 in the opposite direction from the driveways to the proposed solar facility site.

The Transportation Impact Analysis conducted for the Project (Appendix K) considered near-term traffic conditions corresponding with the peak of construction activity for the cumulative projects. The levels of expected traffic relate to the cumulative effect of traffic increases resulting from the implementation of the general plans of local agencies, including Fresno County, and were calculated by applying an annual growth rate of 2 percent per year. The traffic generated by the cumulative projects (conservatively including the hydrogen facility that initially was, but no longer is, a part of the Project) during the peak construction phase were evaluated to determine whether

traffic operating conditions along the study area roadways would exceed significance thresholds established by Fresno County. The analysis concluded that the threshold would be exceeded at the following two study intersections:

- SR 33/W. Adams Avenue – PM peak hour only (LOS F)
- SR 33/W. Manning Avenue – AM and PM Peak hours (LOS E and LOS F, respectively)

The resulting conflict with the General Plan's acceptable operational standard at these intersections at these times under cumulative conditions would result in a significant cumulative effect. However, access to adjacent properties would be maintained, the Heartland Solar Project's contribution to cumulative congestion would not be substantial, and the County would exercise its discretion to otherwise ensure the Project's consistency with County policies addressing the circulation system. Further, **Mitigation Measure 3.18-1** would require the Project owner to prepare a Construction and Decommissioning Traffic Management Plan that assures that the necessary permitting of any oversize vehicles used on public roadways during these phases of the Project would occur, and that the County has sufficient information about anticipated delivery times and vehicle travel routes in advance to work with other project owners to minimize construction and decommissioning traffic during peak a.m. and p.m. hours and to coordinate as necessary with emergency services provides to assure adequate access on shared roads. With the implementation of **Mitigation Measure 3.18-1**, the Heartland Solar Project's incremental contribution to cumulative transportation impact would not be cumulatively considerable. Therefore, the Project's cumulative impact relating to criterion a) would be less than significant.

Mitigation: Implement Mitigation Measure 3.18-1.

Significance after Mitigation: Less than significant.

Criterion b)

Impact 3.18-2c: The Heartland Solar Project would not cause or contribute to significant cumulative effect due to a conflict or inconsistency with CEQA Guidelines section 15064.3(b). (*Less-than-Significant Impact*)

With respect to CEQA Guidelines section 15064.3, the measure of VMT is by nature a cumulative measure, in that the travel demand modeling tool used by the County to calculate VMT includes all reasonably foreseeable cumulative development. Furthermore, as discussed in the context of Impact 3.18-2, the Heartland Solar Project would not exceed the project-level threshold requiring a VMT analysis. Because the Project would not result in any cumulatively considerable contribution to any significant cumulative impact related to criterion b), the Project's cumulative impact relating to criterion b) would be less than significant.

Mitigation: None required.

Criterion c)

Impact 3.18-3c: The Heartland Solar Project would cause or contribute to a significant cumulative effect due to a substantial increase in hazards due to a geometric design feature or incompatible uses. (*Less-than-Significant Impact*)

The Heartland Solar Project's incremental, less-than-significant impact due to an increase in roadway hazards could combine with the similar incremental impacts of the projects identified in Section 3.1.3, *Cumulative Effects Approach*, in Section 3.1, *Introduction to Environmental Analysis*, where the combination of projects would enter and exit the same roadways. Compliance with independently enforceable requirements of the California Vehicle Code and California Streets and Highway Code, consistency with Fresno County standards governing corner sight distance requirements, and conformance with FCFPD-approved plans for access design would ensure that the impact of the Project, combined with the incremental impacts of other projects, would result in a less-than-significant cumulative impact relating to potential hazards relating to geometric design features and incompatible uses. The Heartland Solar Project's cumulative impact relating to criterion c) would be less than significant.

Mitigation: None required.

Criterion d)

Impact 3.18-4c: The Heartland Solar Project could cause or contribute to a significant cumulative effect due to inadequate emergency access. (*Less than Significant with Mitigation Incorporated*)

The Heartland Solar Project's incremental, less-than-significant impact relating to the adequacy of emergency access could combine with the incremental impacts of other projects in and near the Project site. However, the requirements of the Fire Code and Building Code ensuring safe site accessways apply to projects statewide; further, other projects in the cumulative scenario have been or would be subject to review by the FCFPD to ensure appropriate access design before a building permit could be issued. The area is generally flat and access both formal (such as paved County roads) and informal (such as unpaved farm roads) provide access flexibility in the event of an emergency. Further, the Heartland Solar Project will implement **Mitigation Measure 3.18-1**, which will help to ensure adequate roadway access for vehicles. Therefore, the Project's incremental impact, combined with the incremental impacts of other projects in the area, would not cause or contribute to a significant cumulative effect. The Project's cumulative effect would be less than significant.

Mitigation: Implement Mitigation Measure 3.18-1.

Significance after Mitigation: Less than significant.

3.18.4.2 Cumulative Effects of the PG&E Components

Impact 3.18-5c: Construction, operation and maintenance of the PG&E Components would not cause a cumulatively considerable contribution to a cumulative impact on transportation. (*Less-than-Significant Impact*)

The PG&E Components' incremental less than significant transportation impact, in combination with the transportation impacts of other projects in the study area would not cause or contribute to a significant adverse effect relating to VMT, roadway hazards, or the adequacy of emergency access. Public roadway work would affect 1,000 linear feet (approximately 0.2 mile) to install the gen-tie) line. Vehicles and equipment needed for operation and maintenance of the PG&E Components are expected to be consistent in number, type and volume as those currently needed to operate and maintain PG&E's system in the study area under baseline conditions. Multiple other projects could contribute to transportation impacts that would combine with those of the PG&E Components, including the Sonrisa, RE Adams East, Luna Valley, and Tranquillity solar projects (project numbers 14, 2, 18, and 1 on Figure 3.1-1 in Section 3.1, *Introduction to Environmental Analysis*). However, construction is complete for Adams East and Tranquillity solar projects, and construction-related transportation impacts of Sonrisa and Luna Valley solar projects are not expected to cause a significant adverse cumulative effect. The PG&E Components' incremental contribution to cumulative conditions would not be cumulatively considerable; accordingly, PG&E Components' cumulative effect would be less than significant.

Mitigation: None required.

3.18.5 References

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FCRTA (Fresno County Rural Transit Agency). 2018. *Inter-City Transit Westside*, updated on September 11, 2018.

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3.19 Utilities and Service Systems

This section identifies and evaluates issues related to utilities and service systems, such as water, wastewater treatment or storm water drainage, electric power, natural gas, telecommunications, and solid waste facilities. The section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment for the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project).

This analysis is based in part on the water supply assessment (WSA) prepared for the Project (Appendix L). The WSA includes analysis of the Project's water demand and available water supply, specifically anticipated to be provided through Westlands Water District (WWD). A "will serve" letter was provided by WWD and is appended to the WSA (Appendix L).

During the scoping period, the County received comments from WWD generally relating to utilities and service systems, municipal and industrial (M&I) water service regulations, and specifically the WWD water distribution system laterals present near the Project site (Appendix A, *Scoping Report*).

3.19.1 Setting

3.19.1.1 Study Area

For the purposes of this analysis, the study area is defined as all relevant utility or service systems that would provide service to the Project site.

3.19.1.2 Environmental Setting

Water Supply

The Project site is located within the San Joaquin Valley Groundwater Basin, Westside Subbasin. The subbasin covers 972 square miles, bordered by the Diablo Range to the west and other groundwater subbasins to the north, east, and southern boundaries. Most of the land overlying the San Joaquin Valley Groundwater Basin coincides with WWD's service area (DWR 2023). The Westside subbasin is approximately 640,000 acres. The Westlands Water District has jurisdiction over 614,000 acres, or approximately 96 percent of the land that overlays the Westside subbasin. As described in Section 3.11, *Hydrology and Water Quality*, according to the groundwater sustainability plan for the Westside Subbasin, groundwater levels have declined in recent years, indicating that the basin is in an overdraft condition (WWD 2025a). In addition to its role as groundwater sustainability agency, WWD is the largest agricultural water district in the United States, providing water to users in western Fresno and Kings counties, as well as the area surrounding the Project site. WWD uses a combination of imported surface water, local groundwater, and local surface water to serve its customers. Surface water supplies are imported from the Central Valley Project (CVP). WWD's water supply ranged between 1.4 million and approximately 750,0000 acres of water between the years 1988 and 2025 (WWD 2025b). Targeted reductions in pumping for agriculture and fallowing of acreage also occurred over that

timeframe. WWD does not deliver treated water for human consumption and is not considered a public water system (WWD 2023). Potable, bottled water for O&M would be purchased and delivered from a commercial source, as needed.

Solid Waste Management

The Fresno County Resources Division is responsible for County solid waste coordination and solid waste disposal activities and has a number of facilities that could accept solid waste from the Project. The American Avenue Landfill is owned and operated by Fresno County, located within the City of Kerman, approximately 18 miles northeast of the Project site (Fresno County 2023a). Acceptable waste types include tires, mixed municipal, industrial, construction/demolition, asbestos and agricultural. 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 (CalRecycle 2023a). The next nearest landfill is the Billy Wright Disposal Site, which is permitted to receive 1,500 tons of waste per day; it has a remaining capacity of approximately 11,370,000 cubic yards and is expected to reach its permitted capacity in 2054 (CalRecycle 2023b). Acceptable waste types include mixed municipal, construction/ demolition and agricultural. The Project site also is located within the Mid Valley Disposal Company service area. The Mid Valley Disposal company has multiple locations including the Kerman MFR & Transfer Station, Fresno MFR & Transfer Station, Kingsburg Transfer Station, and the Coalinga Transfer Station. The Shaver Lake Transfer Station is operated in partnership with Fresno County, Granite Solid Waste, and the U.S. Forest Service (Fresno County 2023a).

Wastewater

There is no sewer service available to serve the Project as it would be located outside of the Fresno municipal sphere of influence for wastewater treatment. Domestic sanitary waste from use of sinks and toilets at the Project site would be disposed of in a septic system proposed to be installed adjacent to the facility's operations and maintenance (O&M) area.

Stormwater

There is no existing stormwater drainage infrastructure located at the Project site. However, as described in Chapter 2, *Project Description*, the Project may include on-site detention basins to retain stormwater (and prevent runoff) if necessary. The basins would be expected to remain dry most of the year, except during or after a rain event. The topography of the site is generally flat and drainage impaired.

Pacific Gas & Electric

PG&E is an investor-owned utility company that provides electricity and natural gas supplies and services throughout a 70,000 square-mile service area that includes western Fresno County and the Project site (PG&E 2023).

3.19.1.3 Regulatory Setting

Federal

No federal regulations pertaining to utilities and service systems apply to the Project.

State

California Public Utilities Commission General Orders

CPUC General Order 95 applies to the construction and reconstruction of overhead electric service lines. The replacement of poles, towers, or other structures is considered reconstruction and requires adherence to all strength and clearance requirements of the order (CPUC 2020). General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. Utilities must perform "patrol" inspections, which are defined as a simple visual inspection of utility equipment and structures (which inspection is designed to identify obvious structural problems and hazards) at least once per year for each piece of equipment and structure. Detailed inspections, where individual pieces of equipment and structures are carefully examined, are required every 5 years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/ capacitors (CPUC 2013). General Order 166 Standard 1.E requires investor-owned utilities to develop a fire prevention plan, which describes measures that the utility will implement to mitigate the threat of power line fires generally (CPUC 2017). These standards are implemented by the utility and enforceable by the CPUC (as applicable to the PG&E Components).

The California Integrated Waste Management Act

The Integrated Waste Management was enacted in 1989 and codified in Public Resources Code section 40050 et seq. The Act requires all California cities, and unincorporated portions of counties, counties, and approved regional solid waste management agencies to divert a minimum of 50 percent of solid waste from landfills by 2000 and to maintain that 50 percent diversion rate past 2000. Diversion includes waste prevention, reuse, and recycling. The Act resulted in the creation of the California Integrated Waste Management Board, which now is known as CalRecycle. The Act also establishes a comprehensive statewide system of permitting, inspections, and maintenance for solid waste facilities, and authorized local jurisdictions to impose fees based on the types and amounts of waste generated.

Sustainable Groundwater Management Act

In 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law by Governor Brown. SGMA requires governments and water agencies of high and medium priority groundwater basins to manage over drafting to bring the basins to balanced levels of pumping and recharge. SGMA empowers local agencies to form Groundwater Sustainability Agencies to manage basins and adopt Groundwater Sustainability Plans for crucial groundwater basins in California.

22 California Code of Regulations Division 4.5

Title 22 of the California Code of Regulations discusses 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 included for the collection, transport, disposal and recycling of universal wastes, where universal wastes are defined as those wastes identified in section 66273.9 of Title 22 of the California Code of Regulations, including batteries, electronic devices, mercury containing equipment, lamps, cathode ray tubes, and aerosol cans. Requirements include recycling, recovery, returning spent items to the manufacturer, or disposal at an appropriately

permitted facility. Division 4.5 of Title 22 also provides restrictions and standards relevant to waste destination facilities and provides authorization requirements for various waste handlers. Title 22 includes California's Universal Waste Rule, as well as other additional waste handling and disposal requirements. See Section 3.10.1.3, in Section 3.10, *Hazards and Hazardous Materials*, for additional information regarding relevant regulations.

Local

Fresno County

Fresno County Local Area Management Plan

Fresno County Department of Public Works and Planning has regulatory authority overseeing design, installation, and operation of on-site wastewater treatment systems (OWTS), such as the septic tanks and dispersal systems proposed as part of the Project. The County implements a Local Area Management Program (LAMP) in conformance with the Statewide OWTS policy, which serves as a conditional waiver of discharge requirements with the Central Valley Regional Water Quality Control Board (Fresno County 2019). The LAMP consists of an introduction and two parts including responsibilities and the Fresno County OWTS Guidance Manual. Septic systems proposed as part of the O&M facilities would be required to comply with setbacks and design specifications in the LAMP OWTS Guidance Manual.

Fresno County Solar Facility Guidelines

Appendix I2 contains an assessment of the Project's consistency with the Fresno County Solar Facility Guidelines (Fresno County 2017). Item 2 of these guidelines requires the following:

> 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 Construction and Demolition Debris Recycling Program

The Fresno County Construction and Demolition (C&D) Debris Recycling Program provides builders with a way to document waste reduction requirements included in the California Green Building Standards Code (CALGreen) (24 California Code of Regulations 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 2023b).

Fresno County 2024 General Plan

The Fresno County General Plan Public Facilities and Services Element contains the following policies related to utilities and service systems that are relevant to the Project (Fresno County 2024):

General Public Facilities and Services

Policy PF-A.3: Industrial Infrastructure. The County shall require new industrial development to be served by community sewer, stormwater, and water systems where such systems are available or can feasibility be provided.

Policy PF-A.5: Underground Utilities. The County shall encourage the placement of irrigation canals and utility lines underground as urban residential, commercial, and industrial development takes place.

Water Supply and Delivery

Policy PF-C.1: Retain Existing Water Supplies. The County shall engage in, and support, the efforts of others within Fresno County to retain existing water supplies and develop new water supplies.

Policy PF-C.2: Import Surface Water. The County shall actively engage in efforts and support the efforts of others to import flood surplus, and other available waters for use in Fresno County.

Policy PF-C.3: Surface Water Use. 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.4: Water Storage. The County shall support efforts to expand groundwater and/or surface water storage that benefits Fresno County.

Policy PF-C.8: Preserve Local Water Rights/Supply. The County shall work with local irrigation districts and water management agencies to preserve local water rights and supply.

Policy PF-C.10: Ongoing Water Supply. The County shall actively participate, or support the efforts of other local agencies, in the development and implementation of Sustainable Groundwater Management Plans to ensure a sustainable water supply is available to help support agriculture and accommodate future growth.

Policy PF-C.15: Water Demand Impact Mitigation. If the cumulative effects of more intensive land use proposals are detrimental to the water supplies of surrounding areas, the County shall require approval of the project to be dependent upon adequate mitigation. The County shall require that costs of mitigating such adverse impacts to water supplies be borne proportionately by all parties to the proposal.

Policy PF-C.16: Water Supply Evaluation. The County shall, prior to consideration of any discretionary project related to land use, require a water supply evaluation be conducted. The evaluation be conducted. 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 of 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. If use of groundwater is proposed, 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.18: Small Community Water Systems. The County shall discourage the proliferation of small community water systems.

Policy PF-C.19: Private Water Wells. The County shall not permit new private water wells within areas served by a public water system.

Policy PF-C.23: Water Conservation Technologies. 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-C.25: Integrated Regional Water Management Planning. The County shall participate in integrated Regional Water Management Planning efforts with other local and regional water stakeholders to plan for the efficient use, enhancement, and management of surface and groundwater supplies.

Wastewater Collection, Treatment, and Disposal

Policy PF-D.6: On-site Sewage Disposal Systems. 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.

Storm Drainage and Flood Control

Policy PF-E.9: 100-year Flood Protection. The County shall require new development to provide protection from the 100-year flood as a minimum.

Policy PF-E.11: Natural Site Drainage Pattern. The County shall encourage project designs that minimize drainage concentrations and maintain, to the extent feasible, natural site drainage patterns.

Policy PF-E.13: Natural Storm Water Drainage Systems. The County shall encourage the use of natural storm water drainage systems to preserve and enhance natural drainage features.

Policy PF-E.14: Retention-Recharge Basins. 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: Basin Landscaping and Open Space. The County should require that retention-recharge basins be suitably landscaped to complement adjacent areas and should, wherever possible, we made available to the community to augment open space and recreation needs.

Policy PF-E.16: Minimal Sedimentation and Erosion. 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-E.17: Groundwater Recharge. The County shall encourage the local agencies responsible for flood control or storm drainage retention-recharge basins located in soil strata strongly conducive to groundwater recharge to develop and operate those basins in such a way as to facilitate year-round groundwater recharge.

Policy PF-E.20: Storm Water Drainage Discharges. The County shall require new development of facilities near rivers, creeks, reservoirs, or substantial aquifer recharge areas to mitigate any potential impacts of release of pollutants in flood waters, flowing rivers, streams, creeks, or reservoir waters.

Policy PF-E.21: Best Management Practices. The County shall require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and shall encourage the urban storm drainage systems and agricultural activities to use BMPs.

Landfills, Transfer Stations, and Solid Waste Processing Facilities

Policy PF-F.1: Solid Waste Source Reduction. 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.2: Onsite Recycling Storage and Collection. The County shall require new commercial, industrial, and multi-family residential uses to provide adequate areas on-site to accommodate the collection and storage of recyclable materials.

Policy PF-F.5: County Integrated Waste Management Plan. The County shall ensure that all new development complies with applicable provisions of the County Integrated Waste Management Plan.

Policy PF-F.8: Existing Public Landfills. The County has designated the American Avenue Landfill as the regional landfill to serve the incorporated and unincorporated areas of the county. The publicly-operated Coalinga and Clovis landfills may continue to operate provided the sites are operated economically and in compliance with all environmental laws and regulations. Existing publicly-operated landfills may be expanded.

Utilities

Policy PF-J.1: Existing and Future Utility Demands. The County shall encourage the provision of adequate gas and electric, communications, and telecommunications service and facilities to serve existing and future needs.

Policy PF-J.2: Gas and Electric Systems. The County shall work with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and minimizing noise, electromagnetic, visual, and other impacts on existing and future residents.

Westlands Water District Groundwater Sustainability Agency

Amended 2025 Groundwater Sustainability Plan for the Westside Subbasin

The Westside Subbasin has been identified by DWR as a critically overdrafted subbasin (DWR 2020). Under SGMA, groundwater basins in this condition are required to prepare and be managed under a groundwater sustainability plan (GSP). The WWD, acting as groundwater sustainability agency, has prepared a GSP to characterize groundwater conditions in the Westside Subbasin, to evaluate and report on conditions of overdraft, to establish sustainability goals and management criteria for the subbasin, and to describe projects and management actions WWD intends to implement to achieve (groundwater basin) sustainability by 2040. While this 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 groundwater sustainability. The sustainability goal of the WWD (acting as groundwater sustainability agency) is to "continue agriculture production while maintaining groundwater supplies and quality for all beneficial users of groundwater" The goal of the GSP is to develop projects and management actions that result in the sustainable management of groundwater resources of the Subbasin for the long-term community, financial, and environmental benefits of residents and businesses in the Subbasin. The sustainability goal is to ensure that by 2040, and thereafter within the (50-year) planning and implementation horizon (extending to 2070), the Subbasin is operated within its sustainable yield and does not exhibit undesirable results[1] (WWD 2025a).

3.19.2 Significance Criteria

The Project would result in significant impacts to utilities and service systems 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) 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 has 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) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

[1] "Undesirable results" in the context of SGMA and in the groundwater sustainability plan means any of the following conditions: chronic lowering of groundwater levels, reduction in groundwater storage, subsidence, degraded groundwater quality, or depletion of interconnected surface waters.

3.19.3 Direct and Indirect Effects

3.19.3.1 Methodology

The analysis of Project effects on utilities and service systems addresses temporary construction-related and decommissioning-related impacts as well as longer-term impacts that could be caused during Project operation.

3.19.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion 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.

The Heartland Solar Project would not require or result in the relocation or construction of new or expanded natural gas facilities, the construction or relocation of which could cause significant environmental effects, because it would not require the use of natural gas. (*No Impact*)

Mitigation: None required.

Impact 3.19-1: The Heartland Solar Project would not result in the construction of new or expanded water, wastewater treatment, electric power, or telecommunications facilities that would cause significant environmental effects. *(Less-than-Significant Impact)*

Water

Water demand for Project construction would be approximately 400 acre-feet (af) (Appendix L). This water would be provided through WWD groundwater utilizing existing WWD supply infrastructure, or through a M&I water service agreement with WWD. It is anticipated that a temporary water supply could be secured from a source within 5 miles of the Project site. For construction, all potable water would be temporary/mobile. The decommissioning water demand would be 150 af (Cass 2025).

During operation and maintenance, the Project would require an average of about 5 acre-feet per year (afy) of non-potable water for photovoltaic (PV) panel washing and other uses. Water for panel washing could be provided via an M&I water service agreement with WWD. In the event M&I water is unavailable (e.g., if extreme conditions were to occur), then the U.S. Bureau of Reclamation would implement its M&I Water Shortage Supply Policy to deliver CVP water to M&I customers (USBR 2021). Drinking water for O&M staff would consist of bottled water periodically delivered to the Project site by commercial water vendor.

Given the Heartland Solar Project's water demand (from construction, operation and maintenance, and decommissioning), the Heartland Project would not require any additional built infrastructure to supply water to the site, the Project's impact would be **less than significant**.

Wastewater

No new or expanded offsite wastewater treatment facilities are proposed as part of the Project. Portable restroom facilities would be provided during construction and, during operation and maintenance, domestic sanitary waste from use of breakrooms and restrooms with sinks and toilets would be treated through onsite septic systems, which would be installed adjacent to the proposed O&M area. The capacity of the septic tanks and dimensions of the leach fields would be determined based on setback constraints, anticipated use levels, and site-specific soil conditions, among other factors, as required by the Fresno County LAMP. For these reasons, construction of the Project would not require or result in the construction of new or expanded off-site wastewater treatment facilities, the construction of which could cause significant environmental effects. Impacts would be **less than significant** for criterion a).

Electric Power

The Project would construct a PV solar energy generating facility, energy storage system, power lines, and associated facilities and infrastructure. It would include arrays of solar panels and support structures, direct current electricity to alternating current electricity through the inverters and stepped up to 34.5 kV and delivered to the onsite solar facility substation. The onsite substation would either be located at the southern end of the Project site, nearest to the Tranquillity Switching Station, or would be located on the north or south side of W. Adams Avenue. The Project would interconnect to the regional electrical grid at PG&E's existing Tranquillity Switching Station via a generation-tie line. The Project also includes an onsite energy storage system. The energy storage technology ultimately selected could be lithium ion, sodium-sulfur, vanadium-redox flow. The Project would receive service power from PG&E and would have emergency generators available onsite.

The proposed electric facilities and connections could result in potential environmental impacts that are discussed throughout this EIR. The Project would not require or result in the construction or relocation of new or expanded electric facilities beyond those included as part of the Project that would cause an adverse environmental effect. Because the impacts of the construction required to expand electric power facilities are analyzed in resource-specific contexts, the Project's proposed expansion of such facilities would be **less than significant** in the context of this criterion a).

Telecommunications

The Project proposes new telecommunications infrastructure to connect to existing local telecommunication services. As discussed in Chapter 2*, Project Description,* multiple communication systems would be used during Project construction and operation, including telephone, fiber optics, and T1 internet or equivalent. The Applicant anticipates either using existing wired or wireless telecommunications facilities from a local provider or alternatively may install hard wired (land line) systems underground or on overhead lines, as part of the electrical installations, or would supplement with proposed microwave or satellite communications. While it is yet to be determined, telecommunications would be provided either by a local provider or via a 120-foot-tall microwave satellite tower. A typical monopole tower would require a concrete pier foundation up to 5 feet in diameter and 20 feet deep. Because the impacts of the telecommunications-related components of the Project are analyzed on a resource-by-resource

basis throughout Chapter 3, the Project's proposed expansion of such facilities would be **less than significant** in the context of criterion a).

Impact 3.19-2: The Heartland Solar Project could result in the construction of new or expanded stormwater drainage that would cause significant environmental effects *(Less-than-Significant with Mitigation Incorporated).*

Detailed site design has not yet been completed for the Heartland Solar Project; however, the construction, operation and maintenance of onsite stormwater detention facilities would be required if deemed necessary based on pre-construction design analysis and County of Fresno grading requirements. If constructed, the stormwater detention facilities would retain stormwater onsite that could otherwise runoff in a storm event. Site preparation and construction activities would be performed in accordance with a Stormwater Pollution Prevention Plan or similar plan required by **Mitigation Measure 3.11-1: Stormwater Pollution Prevention Plan**, which would include stormwater BMPs to reduce potential adverse effects. This mitigation measure (and SWPPP) would be applicable to all areas of the Heartland Solar Project site, including the solar fields and the gen-tie line alignment. Site-specific BMPs could include strategically placed silt fences and straw wattles to minimize erosion onsite and reduce or otherwise prevent conditions of erosion and storm water runoff. The Project would be designed so that site drainage would continue to follow the natural drainage pattern. All improvements during construction would be made within areas of the Project site that are already disturbed or proposed for disturbance and included in the analysis in this EIR. Therefore, the Heartland Solar Project would not require or result in the construction or relocation of new or expanded stormwater facilities outside the Project footprint. With implementation of **Mitigation Measure 3.11-1**, the Project would not cause any changes in stormwater flow that would cause a significant adverse environmental effect. For these reasons, Heartland Project impacts would be **less-than-significant with mitigation incorporated**.

> **Mitigation:** Implement Mitigation Measure 3.11-1, Stormwater Pollution Prevention Plan. See Section 3.11, *Hydrology and Water Quality*, which provides the full text of this mitigation measure.
>
> **Significance after Mitigation:** Less than Significant. With the implementation of a SWPPP incorporated into construction documents, including requirements for site-specific BMPs developed to reduce runoff and control erosion, potential stormwater impacts of the Heartland Solar Project would be reduced to less-than-significant levels.

Criterion 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 3.19-3: The Heartland Solar Project would have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years. (*Less-than-Significant Impact*)

A WSA (Appendix L) was prepared to demonstrate the availability of water supply during normal, single dry, and multiple dry years, in addition to the area's existing and planned future uses. The WSA concluded that construction and operational water demands of the Project can be met.

Construction

The Heartland Solar Project is proposed on lands within the Westside Subbasin (Groundwater Basin 5-022.09). Water for the Project may be supplied from WWD using existing delivery infrastructure, through an M&I water service agreement with WWD. Water demand associated with construction would be the same if the project is constructed during a normal rain year, a dry year, or in a multiple dry-year period. According to the WSA, the estimated Westside Subbasin sustainable yield for the projected period (according to the GSP baseline model scenario) ranges from 267,000 to 294,000 afy. Demand served by the Westside Subbasin is high in comparison to the basin's sustainable yield, but it is anticipated that the approximately 400 af of water that would be needed during construction would be about 0.04 percent of the safe yield for the Westside Subbasin, which, at its most conservative, would be 267,000 afy (Appendix L). In addition, to continue protecting groundwater supply in times of drought, the Westside Subbasin Groundwater Sustainability Plan (GSP) includes projects and management actions to be implemented by WWD in the Westside Subbasin to ensure the sustainability of the subbasin. These include improving the reliability and availability of surface water, allocating and managing groundwater pumping, implementing large-scale agricultural aquifer storage and recovery programs, incentivizing pumping reductions among private landowners, and managing aquifer recharge through percolation basins. Any unsustainable groundwater pumping is actively monitored as part of the San Joaquin River Exchange Contractors Water Authority GSP and Westside Subbasin GSP and could be offset by implementing projects and management actions intended to enhance groundwater sustainability and avoid undesirable results. In addition, should WWD enter a supply shortage, the U.S. Bureau of Reclamation would implement its M&I Water Shortage Supply Policy in an effort to deliver CVP water to M&I customers such as the Project (USBR 2021).

Based on information provided in the WSA (including the "will serve" letter from WWD appended to the WSA), the Heartland Solar Project is eligible to receive water from the WWD M&I water supply and the land would continue to have access to the WWD distribution system. Therefore, even in dry years there would be sufficient water supplies to serve the Project's construction. WWD does not provide water for residential projects so there would be no conflict related to water demands for foreseeable future residential development. The resulting impact would be **less than significant**.

Operation and Maintenance

During operation and maintenance, the Heartland Solar Project would require about 5 afy of non-potable water if PV panel washing is required, and approximately 1 afy if PV panel washing would not require water. Water for panel washing would be provided via the existing onsite and off-site WWD pipeline network with a new M&I service agreement using existing WWD water conveyance infrastructure. In the event M&I water is unavailable (e.g., if extreme conditions were to occur), then the U.S. Bureau of Reclamation would implement its M&I Water Shortage Supply Policy to deliver CVP water to M&I customers. The water demand for operation and maintenance would be relatively small, especially if panel washing is not needed. As discussed in Section 3.11, *Hydrology and Water Quality*, any potential impacts on the subbasin would be accounted for by project and management actions included in the GSP. These include a groundwater allocation plan which would result in less groundwater pumping due to imposed pumping reductions. Therefore, the WWD would be able to provide 5 afy to the Project during

operations, even in dry or multiple dry years. Impacts associated with operational water demand would be **less than significant**.

Decommissioning

Decommissioning water demand is estimated to be approximately 150 af (Cass 2025). Water for decommissioning may be supplied through WWD supplied groundwater, municipal supplies procured through a local vendor, or through an M&I water agreement with WWD. The worst-case scenario (assumed to occur during multiple dry years) estimates zero water availability through the CVP. During these supply shortages, the U.S. Bureau of Reclamation would implement its M&I Water Shortage Supply Policy to deliver CVP water to M&I customers (U.S. Bureau of Reclamation 2021). Thus, it is assumed that with coverage under this policy, WWD would be able to provide sufficient supplies under the M&I contract to serve the Project's estimated water demand over the next 20 years. As stated above, any potential impacts on the subbasin would be accounted for by following the management actions included in the GSP, including a groundwater allocation plan which would result in less groundwater pumping due to imposed pumping reductions. Decommissioning of the Heartland Solar Project is expected to take 12 months and require 150 af (Cass 2025). As described in Section 3.11, *Hydrology and Water Quality*, this amounts to 0.05 percent of the groundwater basin's safe yield. Accordingly, while WWD has not yet authorized water allocations for Heartland Solar Project decommissioning, it reasonably can be assumed that the sufficient water supply would be available to accommodate the demand based on the fact that multiple sources of water (not limited to groundwater) could be used for dust control and other reclamation related purposes. Therefore, relative to sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years, decommissioning impacts would be **less than significant**.

Mitigation: None required.

Criterion c) Whether the Project would 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.

Impact 3.19-4: The Heartland Solar Project would not result in a determination by the wastewater treatment provider that serves the Project that it does not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments. (*Less-than-Significant Impact*)

Construction

Nominal liquid (human) waste would be generated during construction and operation and maintenance. During construction, all potable water and waste services would be temporary and mobile. The closest wastewater treatment facility capable of receiving such waste is the Mendota Wastewater Treatment Plant. Waste generated during construction would be nominal and would have a less-than-significant impact on the Mendota Wastewater Treatment Plant's ability to serve the Project's projected construction demand.

Operation and Maintenance

Once operational, the Project would have three restrooms with three lavatories and three toilets each as well as one breakroom with a sink. Domestic sanitary waste from use of sinks and toilets would be disposed of in septic systems to be installed adjacent to the facility's operations and maintenance area. The capacity of the septic tanks and dimensions of the leach fields will be determined based on anticipated use and site-specific soil conditions among other factors, as required by the Fresno County LAMP.

Because the O&M facilities would be managing this waste on-site, there is no municipal demand associated with the Heartland Solar Project. Therefore, the Project would not have a significant impact on the wastewater treatment provider's ability to serve the Project demand in addition to the provider's existing commitments.

Decommissioning

During decommissioning and site reclamation, the Heartland Solar Project's septic tanks would be disposed of properly and in accordance with the site's waste discharge requirements and as required by the Fresno County LAMP. Following decommissioning of the septic systems, temporary (mobile) waste services would be provided if needed. As with construction and operations, decommissioning of the Heartland Solar Project would result in a **less-than-significant impact** associated with this criterion.

Mitigation: None required.

Criterion 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.

Impact 3.19-5: The Heartland Solar Project 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 Impact*)

The Heartland Solar Project would comply with the CALGreen Code and the Fresno County C&D Debris Recycling Program, which is intended to assist the County in compliance with the solid waste reduction goals of Assembly Bill 939. The Project also would generate a small amount of waste as part of normal activities. Typical waste may include broken or rusted metal, defective or malfunctioning equipment, electrical materials, empty containers, miscellaneous solid waste, and typical refuse from operations and maintenance staff. Approximately 1 cubic yard of waste per week is anticipated and would be collected weekly by a commercial waste management service provider for delivery to the American Avenue Landfill or a similar facility. As described in Section 3.19.1, *Setting*, the American Avenue Landfill is permitted to receive 2,200 tons of waste per day and has a remaining capacity of approximately 29,358,535 cubic yards. The Billy Wright landfill is permitted to receive 1,500 tons of waste per day; it has a remaining capacity of approximately 11,370,000 cubic yards (CalRecycle 2023a, 2023b). Therefore, landfill waste generated by the Project would not exceed these solid waste facilities' permitted daily tonnage or deplete substantial long-term capacity. Although the Project could

increase total waste generation in the area, the incremental contribution of the Project could be reasonably accommodated by area landfills and would not contribute significantly to the impairment of solid waste reduction goals or generate waste in excess of State or local standards. Therefore, impacts would be **less than significant**.

Mitigation: None required.

Criterion e) Whether the Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

The Heartland Solar Project would comply with independently enforceable state and local laws and regulations that govern solid waste, including the California Integrated Waste Reduction Act, Title 22 Division 4of the California Code of Regulations, the CALGreen Code, and the Fresno County C&D Debris Recycling Program, which is intended to assist the County in compliance with the solid waste reduction goals of Assembly Bill 939. As discussed under criterion d), once the Project is operational, the small quantity of solid waste generated by the Project would be accommodated by area landfills. Furthermore, as described in Section 2.5.5*, Decommissioning and Site Reclamation*, in Chapter 2, *Project Description*, the site would be decommissioned and reclaimed as documented in Appendix B2. Therefore, the Project would cause no impact related to criterion e). (*No Impact*)

Mitigation: None required.

3.19.3.3 Direct and Indirect Effects of the PG&E Components

Impact 3.19-6: Construction, operation, and maintenance of the PG&E Components would not result in significant impacts to utilities and service systems. *(Less-than-Significant Impact)*

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

The installation of PG&E Components would involve ground disturbance and other impacts evaluated throughout the various sections of this EIR. This analysis assumes that PG&E would implement standard protocols and best management practices to limit environmental effects associated with construction, operation, and maintenance of PG&E facilities (PG&E 2025). These standard BMPs include those pertaining to soil disturbance and vegetation management. PG&E has an environmental screening process for capital improvements and other non-vegetation management activities that require the implementation of environmental protection measures associated with PG&E work consistent with CPUC general orders and regulatory requirements

such as those associated with the San Joaquin Valley Habitat Conservation Plan, among others. Refer to Section 3.5, *Biological Resources*, for those specific measures. The PG&E Components would require minimal and temporary water resources.

Construction water, wastewater and solid waste demand associated with the PG&E Components would be negligible and handled in a manner which would not impact local capacities. Once operational, there would be no ongoing wastewater or water requirements and nominal solid waste generated for the gen-tie line and Tranquillity Switching Station. The demand would be similar to that required under existing O&M demands of these PG&E facilities. Considering that the PG&E Components would be constructed, operated and maintained in a manner designed to ensure that activities are performed in an environmentally sensitive manner to minimize environmental effects, and the utilities and service systems requirements would be negligible, the resulting potential impacts would be **less than significant**.

Mitigation: None required.

3.19.4 Cumulative Effects Analysis

3.19.4.1 Cumulative Effects of the Heartland Solar Project

Criteria a)

Impact 3.19-1c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, or telecommunications facilities. ***(Less-than-Significant Impact)***

The geographic scope of potential cumulative impacts related to utilities and service systems would include the service areas of the utility and service providers that would serve the Heartland Solar Project site. The Project could contribute to cumulative conditions from the initiation of onsite work until site reclamation is complete. With mitigation implemented, the Project's incremental, less than significant impact related to stormwater, when combined with the incremental impacts of projects identified in Section 3.1.3, *Cumulative Effects Approach*, would not result in a significant cumulative impact from the construction or expansion of utility and service systems because the Project would not require new or expanded water, wastewater treatment, or other utilities, once operational. Therefore, no significant cumulative impact would occur. The Project's cumulative impact associated with these utilities and service systems would be less than significant.

Mitigation: None required.

Criterion b)

Impact 3.19-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to insufficient availability of water supplies to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. (*Less-than-Significant Impact*)

The WSA determined water availability during normal, single dry, and multiple dry years during the Heartland Solar Project lifespan in addition to the area's existing and planned future uses. As is the case for the Project's construction-related water consumption, this demand would be short-term and would likely be met using groundwater supplies, which are understood to recover from short-term periods of heavier than average withdrawal, or would be met using WWD-provided water, which the district manages for long-term supply reliability. The majority of the projects listed in Section 3.1.3, *Cumulative Effects Approach*, are solar or electrical transmission projects. Water demands for longer-term operation and maintenance activities needed to support solar facilities like the Tranquillity, Adams East, Luna Valley, Darden, Scarlet, and Sonrisa solar projects typically are minimal. Electrical transmission does not require an ongoing water supply. WSAs and other analyses of these past, present and reasonably foreseeable future projects confirm this. Therefore, the Project's incremental less-than-significant impact, combined with the incremental impacts of other projects in the geographic area, would not cause a cumulatively considerable contribution to a significant cumulative impact on water supplies. The Project's cumulative impact would be less than significant.

Mitigation: None required.

Criteria c)

As described in Section 3.19.3.2, *Direct and Indirect Effects of the Project*, the Heartland Solar Project would result in a less than significant incremental impact that would combine with the incremental impacts of other projects identified in Section 3.1.3, *Cumulative Effects Approach*. Because the Project's construction-phase needs would be served by portable facilities and operations and maintenance phase needs would be served by onsite septic systems, the Project's less than significant impact would not combine with other projects' impacts to cause or contribute to a significant cumulative impact on wastewater treatment providers' capacity. The Project would not require ongoing wastewater treatment other than the onsite septic system and would not rely on an external wastewater treatment provider. Therefore, the Heartland Solar project would have no cumulative impact (*No Impact*).

Mitigation: None required.

Criteria d)

Impact 3.19-3c: The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to the generation of solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or due to other impairment of the attainment of solid waste reduction goals. (*Less-than-Significant Impact*)

The geographic scope of potential cumulative impacts to landfill capacity would be the areas served by the American Avenue and Billy Wright landfills, and the Mid Valley Disposal Company. The Heartland Solar Project would generate solid waste (causing less than significant impacts) of approximately 1 cubic yard per week, and would recycle in accordance with applicable laws, regulations, plans and policies. This analysis conservatively assumes that the American Avenue landfill would not be available to accommodate the Project's solid waste during decommissioning, in combination with the solid waste that would be generated by other projects; however, the Billy Wright landfill or an alternate location is expected to be available based on capacity projections. Further, to comply with the Integrated Waste Management Act, described in Section 3.19.1.3, *Regulatory Setting*, Fresno County is required to specify areas for transformation or disposal sites to provide capacity for solid waste generated in the jurisdiction which cannot be reduced or recycled for a 15-year period, 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 that the County, therefore, would have at least 15 years of remaining capacity at the time of Project decommissioning and that decommissioning waste could be disposed of within Fresno County and within the limits of available permitted capacity. Therefore, the cumulative demand for solid waste disposal is not expected to exceed the permitted capacity of available landfills and the Project's incremental contribution to cumulative capacity would not be cumulatively considerable. The Project's cumulative impact would be less than significant.

Mitigation: None required.

3.19.4.2 Cumulative Effects of the PG&E Components

Impact 3.19-4c: Construction, operation, and maintenance of the PG&E Components would not cause a cumulatively considerable contribution to cumulative utilities-related impacts. (Less-than-Significant Impact)

As described in Section 2.5.2 of Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kV gen-tie line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be conducted on approximately 2 acres within the existing (previously disturbed) Tranquillity Switching Station.

The PG&E Components would result in less than significant direct and indirect effects, mostly associated with soil disturbing activities and other effects, which are evaluated throughout this

EIR. As described under 3.19.3.3, the PG&E Components would include an expansion of electrical facilities, but would not place demands on water, wastewater or solid waste capacity once operational. Construction impacts would be negligible and less than significant.

The cumulative projects described in Table 3.1-1 (with locations shown on Figure 3.1-1) include other electrical transmission and distribution lines, as well as other renewable energy facilities. These projects would be required to adhere to the same or similar standards for vegetation management, hazardous materials storage, and fire protection consistent with CPUC general orders and other requirements described in the regulatory setting. As discussed, the water demand associated with electrical facilities would be limited to that required for construction (mostly for dust control and site work). No ongoing water or wastewater demand would occur once operational. Solid waste generation would also be negligible and generally limited to the construction phase. The less-than-significant effects of the PG&E Components would not combine with effects of other projects to result in a cumulative effect. There is no existing significant cumulative impact, and the incremental, less-than-significant contribution of the PG&E Components when combined with the incremental impacts of other projects in the cumulative scenario would not cause one. Cumulative impacts of the PG&E Components would be **less than significant**.

Mitigation: None required.

3.19.5 References

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3.20 Wildfire

This section identifies and evaluates issues related to wildfire, including potential impacts on emergency response or emergency evacuation plans, exposure of Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project) occupants to pollutants from or the spread of wildfire, the exacerbation of fire risk, and the exposure of people or structures to other significant wildfire risks. This section identifies the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used to evaluate impacts, and the results of the impact assessment. Fresno County (the County) did not receive any scoping comments pertaining to wildfire or fire risk. See Appendix A, *Scoping Report*.

3.20.1 Setting

Wildfire is defined as an "unplanned unwanted wildland fire" in California Government Code section 51177. Wildland fires affect grasslands, forests, and brushlands, as well as any structures on these lands. They also carry the potential for injury, loss of life, and property damage. Such fires can occur from either human-generated factors or natural causes. The type and amount of fuel, topography, and weather are the primary factors influencing the degree of fire risk in an area.

Whereas the State of California (through the California Department of Forestry and Fire Protection [CAL FIRE]) has the primary legal and financial responsibility for the prevention and suppression of wildland fires in State Responsibility Areas, Local Responsibility Areas include incorporated cities and more densely populated areas with fire protection typically provided by city fire departments, fire protection districts, counties, and/or joint agreements with CAL FIRE. The Project site is entirely within a Local Responsibility Area under the fire protection authority of Fresno County.

3.20.1.1 Study Area

For the purposes of this analysis of wildfire risk, emergency response and evacuation, and post-fire pollution and runoff-related impacts, the study area includes the parcels that make up the Project site, as well as the parcels surrounding the Project site and related access roads, structures, and vegetation.

3.20.1.2 Environmental Setting

Fire Environment

Fire behavior is dependent upon fuels (e.g., vegetation), weather (e.g., wind, temperature, and humidity), and topography (e.g., slope, elevation, and aspect). The combination of these factors, which are described in more detail below, can help or hinder the spread of wildfire if it occurs.

Topography

Topography describes the shape of the land and can include descriptions of elevation (height above sea level), slope (the steepness of the land), aspect (the direction a slope faces), and features such as canyons and valleys. Topography can strongly influence fire behavior, including how fast a fire moves through an area: fire typically moves more quickly as it travels uphill

compared to either downhill or across flat terrain. As heat rises in front of the fire, it preheats and dries upslope fuels, resulting in their rapid combustion (Bennett 2017).

Fresno County can be categorized into three geographical regions as distinguished by their topography. The three regions include: (1) broad, flat valley floors that generally slope from the southeast to the northwest; (2) foothills and moderately high mountains (Coast Ranges) in the west; and (3) foothills and high mountains (Sierra Nevada) in the east. Approximately 55 percent of the County is mountainous, and 45 percent is valley land. Elevations range from 100 to 400 feet on the valley floor to 4,000 feet in the Coast Ranges and more than 14,000 feet in the Sierra Nevada (Fresno County 2018).

The Project site is in western Fresno County, which contains predominantly flat (San Joaquin Valley) terrain. The topography of the San Joaquin Valley has a dominating effect on wind flow patterns in Fresno County. The San Joaquin Valley extends from north of Redding to south of Bakersfield bounded by the Sierra Nevada to the east, the Coast Range to the west, the Tehachapi Range to the south, and the Cascade Range to the north. These mountain ranges provide a buffer from Pacific marine weather systems drawn inland by the jet stream.

Weather/Climate

Weather conditions such as wind, temperature, and humidity also contribute to fire behavior. Fuels located in hotter and drier temperatures are more susceptible to ignition and catch fire more readily than fuels located in moister and/or cooler temperature conditions.

Summers are long, hot, and dry in the valley where the Project site is located. Winters are short and mild with light rain. Most of the seasonal precipitation occurs between October and April (Fresno County 2018). Over the course of the year, the temperature typically varies from 39 degrees Fahrenheit (°F) to 99 °F and is rarely below 31 °F or above 106 °F. Winds tend to blow from the northeast to the southwest flowing parallel to the valley and its bounding mountain ranges. In spring and early summer, the thermal low-pressure systems develop over the interior basins east of the Sierra Nevada, and the Pacific high-pressure system moves northward producing relatively strong northwesterly winds in the spring and early summer. During summer, winds are usually light in the mornings, but as temperatures increase during the day, the prevailing northwesterly wind becomes stronger. In the afternoon, winds of 10 to 20 miles per hour are fairly common (Fresno County 2024).

Vegetation/Fuels

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel sources are diverse and include dead tree leaves, twigs, branches, and standing trees; live trees; brush; and dry grasses. Additional fuel sources can include structures such as homes, buildings, and other associated combustible materials. Fuel types in the vicinity of the Project site are primarily made up of annual grasses, with deciduous oaks and heavy brush also occurring in western Fresno County (Fresno County 2018). The Project site and immediate surrounding area contain predominantly agricultural fallow land and few trees, brush, or branches. This relative lack of vegetative fuels notably decreases fire hazard risks on the site. For additional description of vegetation types surrounding the Project site, see Section 3.4, *Biological Resources*.

Wildfires and Air Pollution

Smoke generated through wildfires is comprised of a mixture of gaseous pollutants (e.g., carbon monoxide), hazardous air pollutants (e.g., polycyclic aromatic hydrocarbons), water vapor, and particle pollution. Particle pollution is the main component of wildfire smoke and the principal concern for public health (USEPA 2022). As wildfires burn fuel, large amounts of carbon dioxide, black carbon, brown carbon, and ozone precursors are released into the atmosphere. Additionally, wildfires emit a substantial amount of volatile and semi-volatile organic materials and nitrogen oxides that form ozone and organic particulate matter. These emissions can lead to harmful exposures for first responders, nearby residents, and populations in regions that are farther from the wildfires (NOAA 2022). Exposure to these pollutants can generate asthma attacks, coughing, and shortness of breath. Section 3.4, *Air Quality*, contains additional information about potential air contaminants.

California Department of Forestry and Fire Protection Fire Hazard Severity Zones

CAL FIRE has published Fire Hazard Severity Zone (FHSZ) maps for lands in State Responsibility Areas. However, in local responsibility areas, where CAL FIRE does not have jurisdiction to officially designate FHSZs, CAL FIRE has published maps of recommended Very High FHSZs, which cities and counties are encouraged to adopt into local plans; however, no Very High FHSZs have been recommended in Fresno County. The Project site is in an "unzoned" local responsibility area and not located in a wildland area. Non-wildland areas consist of urban, agricultural and barren lands, water and wetlands (CAL FIRE 2022). The nearest FHSZ in any jurisdiction is located more than 7 miles west and southwest of the Project site and is designated as a Moderate FHSZ (CAL FIRE 2023). This indicates a low level of concern by CAL FIRE regarding wildfire hazard in the vicinity of the Project site.

California Public Utilities Commission–Designated Wildfire Hazard Zones

The California Public Utilities Commission (CPUC), pursuant to its fire safety rulemaking, mapped high-fire-threat areas where more stringent inspection, maintenance, vegetation clearance, and wire clearance requirements apply pursuant to CPUC General Orders 95, 165, and 166, which are described in Section 3.20.1.3, *Regulatory Setting*. The analysis assumes above ground transmission lines (such as the proposed generation-tie line) would be implemented due to the elevated risk for such power line fires. The CPUC High Fire Threat District Map identifies elevated risk for fires associated with utility infrastructure based on criteria such as fire hazards associated with historical power line-caused wildfires and current fuel conditions and scores geographic areas based on source ignition locations (as opposed to where potential fires may cause impacts). The Project site is not located in a CPUC-designated High Fire Threat District (CPUC 2021).

Fire Protection Services

Fire protection services in the vicinity of the Project site are provided by the Fresno County Fire Protection District (FCFPD). Section 3.16, *Public Services*, outlines additional details regarding fire protection services. The closest fire station to the Project site is District Station 96, which is located at 101 McCabe Avenue in Mendota (FCFPD 2023). The FCFPD, as the local responsible

agency, would have primary responsibility for responding to fires for the Project site and the surrounding areas.

3.20.1.3 Regulatory Setting

Federal

North American Electric Reliability Corporation Standards

The North American Electric Reliability Corporation (NERC), a not-for-profit international regulatory authority, is comprised of 10 regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America (NERC 2025). To achieve this goal, NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel. 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 kilovolts (kV) and higher, as well as lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electricity grid (NERC 2013). Because the Project proposes to connect to the Tranquillity Switching Station via a 230 kV line, NERC's transmission vegetation management program requirements apply to the Project.

As outlined in NERC Standard FAC-003-2, Transmission Vegetation Management, updated effective May 9, 2013, requirements of the transmission vegetation management program include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors while accounting for 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 (NERC 2013).

State

California Fire Code and Public Resources Code

Similar to the International Fire Code and the California Building Code (CBC), the CFC (Title 24 California Code of Regulations Part 9) uses a hazards classification system to determine the appropriate measures to incorporate to protect life and property. It is an enforceable set of regulations consistent with nationally recognized and accepted practices for safeguarding life and property from the hazards of fire and explosion; dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; and hazardous conditions in the use or occupancy of buildings or premises. It regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Section 608 of the International Fire Code has been 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.

Chapter 12 of the CFC specifically addresses the installation, maintenance, repair, retrofitting, testing, commissioning, and decommissioning of energy systems including standby and emergency power, portable generators, photovoltaic systems, fuel cell energy systems and energy storage systems.

CAL FIRE 2024 Strategic Fire Plan for California and Fresno-Kings Unit Strategic Fire Plan

The California Strategic Fire Plan outlines 21 Operational Units. The Project site is within the Fresno-Kings Operational Unit and would follow goals and objectives outlined within the Fresno-Kings Unit Strategic Fire Plan, which was completed by a collaborative effort with various stakeholders in the Unit, program managers, bureau managers, and Battalion Chiefs. The Unit's Fire Plan is updated each year based upon the accomplishments, goals, and objectives outlined by the Unit and the California Strategic Fire Plan (CAL FIRE 2024). The Unit's Fire Plan is executed by a continued working relationship with CAL FIRE and the FCFPD and is divided into battalions. The Project site is within the jurisdictional area of Battalion 15, which predominantly covers the central and western area of the FCFPD in the Fresno Kings Unit (CAL FIRE 2020). Battalion 15 consists of 730,970 acres of local responsibility area.

California Emergency Response Plan

California has developed an emergency response plan, pursuant to the Emergency Services Act (Government Code section 8550 et seq.) to coordinate emergency services provided by federal, state, and local governmental agencies and private entities. The plan is administered by the State Office of Emergency Services. The plan defines the "policies, concepts, and general protocols" for the proper implementation of the California Standardized Emergency Management System, which is an emergency management protocol that agencies within the State of California must follow during multi-agency response efforts whenever state agencies are involved.

Public Utilities Code Section 761.3

Public Utilities Code section 761.3 requires that battery energy storage facilities develop emergency response and emergency action plans. Each facility is required to coordinate with local emergency management agencies and first responders when creating these plans. Additionally, facility owners or operators must submit their plans to the relevant county and city authorities.

California Public Utilities Commission General Orders

General Order 95

CPUC General Order 95 applies to the construction and reconstruction of overhead electric service lines. The replacement of poles, towers, or other structures is considered reconstruction and requires adherence to all strength and clearance requirements of the order.

The CPUC has promulgated various rules to implement the fire safety requirements of General Order 95, applicable to the overhead portion of the Project's proposed medium voltage electrical service line and high connection to the Tranquillity Switching Station, including:

1. Rule 18A, which requires utility companies take appropriate corrective action to remedy Safety Hazards and General Order 95 nonconformances. Additionally, this rule requires that each utility company establish an auditable maintenance program.

2. Rule 31.2, which requires that lines be inspected frequently and thoroughly. It also requires lines temporarily out of service to be inspected and maintained.
3. Rule 35, which requires that vegetation management activities be performed to establish necessary and reasonable clearances. These requirements apply to all overhead electrical supply and communication facilities that are covered by this General Order. Specifically, this applies to communication and electric supply circuits, energized at 750 volts or less, be kept clear of vegetation in new construction and when circuits are reconstructed or repaired.
4. Rule 38, which establishes minimum vertical, horizontal, and radial clearances of wires from other wires (CPUC 2020).

General Order 165

General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. Utilities must perform "patrol" inspections, which are defined as a simple visual inspection of utility equipment and structures (which inspection is designed to identify obvious structural problems and hazards) at least once per year for each piece of equipment and structure. Detailed inspections, where individual pieces of equipment and structures are carefully examined, are required every 5 years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/ capacitors. By July 1 of each year, each utility subject to this General Order must submit an annual report of its inspections for the previous year under penalty of perjury (CPUC 2013).

General Order 166

General Order 166 Standard 1.E requires investor-owned utilities (IOUs) to develop a fire prevention plan, which describes measures that the utility will implement to mitigate the threat of power line fires generally. Additionally, this standard requires that IOUs outline a plan to mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning event in a high fire threat area. Fire prevention plans formulated by IOUs are required to identify specific parts of the utility's service territory where the conditions described above (i.e., Red Flag Warnings and high wind events) may occur simultaneously. Standard 11 requires that utilities report annually to the CPUC regarding compliance with General Order 166 (CPUC 2017). In compliance with Standard 1.E of this General Order, PG&E adopted a fire prevention plan on September 30, 2017, and updated this plan in 2019.

PG&E Company Emergency Response Plan

Standard 1 also requires that utilities prepare an emergency response plan. PG&E's Emergency Response Plan, prepared in compliance with Standard 1 describes and formalizes PG&E's in-place plans and protocols for responding to emergencies. The plan identifies potential hazards, available resources to respond to emergencies, internal communication protocols, and operational structure. Additionally, PG&E's Wildfire Safety Operations Center operates 24-hours a day during wildfire season (PG&E 2018).

PG&E Wildfire Mitigation Plan

On February 5, 2021, PG&E submitted its 2021 Wildfire Mitigation Plan (WMP) in compliance with California SB 901, SB 1028, AB 1054, and direction from the CPUC Wildfire Safety Division. The WMP has been updated multiple times following production of the initial version.

The latest 2025 WMP provides updated fire hazard risk modeling related to system hardening and vegetation management work. PG&E's WMP includes a comprehensive Community Wildfire Safety Program, incorporates lessons learned from prior wildfire seasons, and outlines the additional programs planned to continue to reduce the risk of catastrophic wildfires. PG&E's WMP has three overarching goals: 1) reducing wildfire ignition risk, 2) enhancing wildfire risk situational awareness, and 3) reducing the impact of Public Safety Power Shutoff events. The WMP benefits from both historical data (weather patterns, detailed information on previous ignitions, outages and other risk events, etc.) as well as state-of-the-art tools such as fire-spread technology that show the locations where specific infrastructure failures can lead to ignitions that have the highest consequences for specific communities. Wildfire mitigation workstreams, system hardening, and enhanced vegetation management will be a main focus for the WMP in higher risk circuit segments and in fire rebuild areas (PG&E 2025).

Local

Fresno County General Plan

The Health and Safety Element of the Fresno County General Plan establishes policies and programs to protect the community from risk associated with emergency management and response, as well as fire hazards. The Fire Hazards section within the Health and Safety Element is designed to ensure that new development is constructed to minimize potential fire hazards, minimize the risk of fire in already developed areas, and to provide public education concerning fire prevention (Fresno County 2024).

Goal HS-B: To minimize the risk of loss of life, injury, and damage to property and natural resources resulting from fire hazards.

Policy HS-B.1: Fire Hazards Review. 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: Landscape Features. In consultation with the local fire agency and CalFire, the County shall require structures to be sited to maximize low-flammability landscape features to buffer against wildfire spread. Consultation with the local fire agency will be necessary to make this determination.

Policy HS-B.7: Fire and Emergency Vehicle Access. The County shall require new discretionary development projects to have adequate access for fire and emergency vehicles and equipment. All major subdivisions shall have a minimum of two (2) points of ingress and egress. The County shall implement feasible recommendations in AB2911 [Assembly Bill 2911] Office of the State Fire Marshall Subdivision Survey Reports, which survey subdivisions without a secondary means of egress routes for evacuation and other fire safety factors.

Policy HS-B.14: Minimum Fire Flow Water Systems. The County shall require new discretionary development to have water systems that meet fire flow requirements as determined by applicable California Fire Code requirements and/or National Fire Protection Association (NFPA) standards under the authority of the Chief Fire Code Official and as referenced in County Ordinance Code. Where minimum fire flow is not available to meet these standards, alternate fire protection measures, including sprinkler systems and on-site water supply or storage, shall be identified, and may be incorporated

into development if approved by the appropriate fire protection agency. The County shall require that all public water providers maintain the long-term integrity of adequate water supplies and flow to meet fire suppression needs.

Policy HS-B.15: Fire Protection. The County shall ensure that any new development will have adequate fire protection, including proximity to adequate emergency services, adequate provisions for fire flow and emergency vehicle access and fire hardened communication, including high speed internet service.

Policy HS-B.24: Emergency Vehicle Access. The County shall require all new discretionary development consisting of major residential subdivisions and large commercial projects to provide, and existing development to maintain, adequate access for emergency vehicles, including two points of access for subdivisions and multifamily developments.

Fresno County Multi-Jurisdictional Hazard Mitigation Plan

Fresno County, along with 17 other participating jurisdictions, developed the Fresno County Multi-Jurisdictional Hazard Mitigation Plan to improve protection of people and property of the County during hazard events such as wildfire. The purpose of the plan is to reduce or eliminate any long-term risk to people and property from hazards such as floods, wildfires, severe weather, drought, and agricultural hazards which could have a significant impact on the County (Fresno County 2018). The Multi-Jurisdictional Hazard Mitigation Plan recommends multiple mitigation actions to reduce the County's vulnerability to hazardous events, such as emergency plans or evacuation routes. In addition, the plan outlines specific goals and objectives to reduce or avoid long term vulnerabilities related to the identified hazards. The goals relevant to an analysis of wildfire are identified as follows:

Goal 1: Provide Protection for People's Lives from Hazards

Goal 2: Improve All Communities Resilience and Capabilities to Mitigate Hazards and Reduce Exposure to Hazard-Related Losses

Goal 3: Improve Community and Agency Awareness about Hazards and Associated Vulnerabilities that Threaten Fresno County Planning Communities

Goal 4: Provide Protection for Critical Facilities, Utilities, and Services from Hazard Impacts

Fresno County Operational Area Master Emergency Services Plan

In 1995, the Fresno County Board of Supervisors adopted California's Standardized Emergency Management System, established the geographic area of the County of Fresno as the Fresno County Operational Area, and designated Fresno County as the Operational Area Lead Agency. The Fresno County Office of Emergency Services (OES) coordinates the development and maintenance of the Fresno County Operational Area Master Emergency Services Plan (Fresno County OAMESP). The OES prepared the Fresno County OAMESP to serve as a guide for response to an emergency or disaster in the unincorporated areas of the Fresno County Operational Area, and to coordinate and assist with the disaster response in jurisdictions both within and outside of the Fresno County Operational Area. The plan acknowledges that the regions of relatively high wild land fire vulnerabilities are in the rural foothills and mountainous regions in the west and east areas of Fresno County (Fresno County 2017).

3.20.2 Significance Criteria

The Project would result in significant impacts to wildfire if it would:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan;

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment;

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

3.20.3 Direct and Indirect Effects

3.20.3.1 Methodology

This analysis of direct and indirect effects on wildfire is based on the considerations identified in the CEQA Guidelines Appendix G environmental checklist that are listed in Section 3.20.2, *Significance Criteria*. To evaluate potential impacts, applicable Fresno County plans were reviewed including the County's General Plan, Multi-Jurisdictional Hazard Mitigation Plan, and the Master Emergency Services Plan. This analysis assumes that the Project would comply with all regulatory standards governing fire safety and that those regulations would be enforced to the extent that they are now.

3.20.3.2 Direct and Indirect Effects of the Heartland Solar Project

Criterion a) Whether the Project would substantially impair an adopted emergency response plan or emergency evacuation plan.

Impact 3.20-1: The Heartland Solar Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. (*Less-than-Significant with Mitigation Incorporated*)

Although no specific evacuation routes are identified in the Fresno County Multi-Jurisdictional Hazard Mitigation Plan (Fresno County 2018), Master Emergency Services Plan (Fresno County 2017), or in the Fresno County General Plan (Fresno County 2024), any such routes would be determined by responders based on the specific geographic areas of impact by a particular emergency in coordination with local law enforcement and emergency service responders in the event of an emergency.

The Project site is adjacent to State Route (SR) 33, which is classified in the Fresno County General Plan as a freeway. SR 33 serves as a County thoroughfare connecting the northern and southern portions of Fresno County, as described in more detail in Section 3.18, *Transportation*.

Access to the Project site would be from W. Adams Avenue; thus, site ingress and egress during Project construction and operation would not directly impede emergency response or evacuation along SR 33, which is the major thoroughfare in the Project area.

Vehicle trips and temporary lane closures due to Heartland Solar Project construction and decommissioning activities could contribute to emergency-related congestion on publicly used and County-maintained roadways surrounding the Heartland Solar Project site in the event of an emergency or evacuation. This could lead to a significant impact. However, to reduce potential congestion or emergency response delay-related impacts, the Heartland Solar Project would comply with a Construction and Decommissioning Traffic Management Plan as part of **Mitigation Measure 3.18-1: Construction and Decommissioning Traffic Management Plan**, as described in Section 3.18, *Transportation*. Accordingly, Project construction and decommissioning would be required to follow this plan and allow for adequate emergency access to, from, and within the Heartland Solar Project site subject to the requirements of the current Fire Code and Building Code. Therefore, with mitigation measures implemented, the Heartland Solar Project would not require lengthy or repeated closures of public roads that could otherwise inhibit access by emergency response vehicles.

Heartland Solar Project operation is not anticipated to require land closures, with the possible exception of maintenance and repair activities. Project operation would comply with all current Fire and Building Code requirements. The Project BESS also would comply with the requirements of Public Utilities Code section 761.3, which requires BESS facilities to have an emergency response and emergency action plan covering the premises of the facility that is prepared in coordination with local emergency management agencies, unified program agencies, and local first responders. The Applicant would work with first responders to develop these plans and to coordinate site-specific training for first responders. If needed, emergency response services could be provided, and evacuation could occur via the surrounding road network or through the Heartland Solar Project site via perimeter or internal roads. Operation of the Heartland Solar Project would not impair an emergency response plan or emergency evacuation plan; the operations-phase impact would be less than significant.

> **Mitigation:** Implement Mitigation Measure 3.18-1, Construction and Decommissioning Traffic Management Plan in Section 3.18, *Transportation*.
>
> **Significance after Mitigation:** Less than significant.

Criterion b) Whether the Project would, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

Impact 3.20-2: The Heartland Solar Project would not, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. (*Less-than-Significant Impact*)

The Heartland Solar Project would not include residents, so *occupants* for purposes of this analysis means *workers*. It is expected that an average of 375 workers would be onsite to construct the solar and energy storage facilities over an approximately 40-month period, with a maximum of 625 workers onsite at the peak of construction. As described in Chapter 2, *Project Description*, security personnel could be onsite up to 24 hours per day, 7 days per week, and operations and maintenance staff typically would be onsite during regular business hours Monday through Friday to conduct periodic, routine visual inspections and minor repairs, and to conduct equipment maintenance or replacement as needed. During regular operation and maintenance, three staff members would be onsite during regular business hours with larger crews of approximately 25 workers required for certain activities.

The Heartland Solar Project site is in the central San Joaquin Valley, where prevailing winds vary by season but generally blow in a northwesterly direction relative to the location of population centers. Wildfire risk in this region is generally considered to be low because the landscape is flat, and vegetation (along with associated fuels) is relatively sparse, predominantly consisting of agricultural fallow land and few trees, brush, or branches. While there are two small, isolated, eucalyptus (*Eucalyptus* sp.) groves present within the Project site, there are no forests in the vicinity. Although prevailing winds can be high in the region, there are few ignition sources and low vegetative fuel levels. The site is not located in a fire hazard severity zone, nor are there slopes or fuel loads in the vicinity, including vegetation types discussed in Section 3.4, *Biological Resources,* that would exacerbate fire risk. In the absence of other factors, prevailing winds would not be expected to result in conditions of high fire risk that exposes Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

The risk is low that the Project would ignite a fire. While photovoltaic (PV) solar farm fires are rare, they are not unheard of (Firetrace International 2022). “Installed properly, PV solar panels do not cause fires. Most PV modules are tested by Underwriters Laboratories (UL), which subjects them to the rigors of everyday use before they are certified.” (Gromicko 2023). However, electric arcs, direct current connectors or inverter malfunctions, and engine or tailpipe heat from vehicles near dry vegetation can pose a risk (Trabish 2011). The risk of fire from solar facilities can be reduced by:

- Regular inspections by a qualified professional of electrical and other components for damage by rodents or other pests that could compromise wiring or insulation as well as to monitor regular wear and tear due to weathering;

- Clear, systematic labeling of system components (including the main service disconnect panel, live conduit, and energy storage system components) to ensure that technicians and firefighters can readily identify key elements of the system; and
- Maintenance of sufficient pathways and perimeter space through and around the facility for safe access by responders in the event of an emergency.

Although construction, operation, maintenance, and decommissioning of the Heartland Solar Project would require the use of vehicles and equipment on the Heartland Solar Project site that could result in an ignition that could lead to the spread of wildfire, the risk of such an impact would be low. The Applicant also proposes to follow a regular maintenance protocol. The presence of regularly inspected, properly maintained equipment on the Project site would have a less-than-significant impact related to the exacerbation of wildfire risks.

According to recent data, battery energy storage system (BESS) fires are considered relatively rare,[1] with the rate of incidents significantly decreasing over the past few years even as the number of BESS installations has grown rapidly.[2] However, when they do occur, BESS fires can be potentially serious due to the smoke generated and challenges in extinguishing them effectively. As discussed in Impact 3.10-2 of Section 3.10, *Hazards and Hazardous Materials*, the BESS would be designed, constructed, and operated in accordance with applicable industry best practices and regulatory requirements, including, but not limited to, National Fire Protection Association 855 (Standard for the Installation of Stationary Energy Storage Systems), section 1206 of the California Fire Code, and certified to UL 9540, including UL 9540A requirements for testing thermal runaway. These features include thermal management solutions designed to prevent overheating and thermal runaway. They are also designed with fire detection systems and to be continuously managed using real-time diagnostics to ensure that cells operate within safe parameters to reduce the potential for overheating and subsequent ignition. These features, combined with independently enforceable safety protocols and regular maintenance, would contribute to a decreased risk of ignition at the BESS.

However, even if ignition leading to a wildfire or the uncontrolled spread of a wildfire should occur, the Project would not exacerbate the risk of exposure of Project occupants to pollutant concentrations. In the unlikely event of a fire or thermal runaway event, the facility is designed to manage and prevent propagation beyond the immediate area. Project workers and nearby residents, if necessary, would be evacuated out of the area. In the event of a lithium-ion battery enclosure fire, the fire and smoke produced are similar to a car fire and do not pose a greater risk than other structures. For example, following a recent battery fire in Escondido, California, San Diego County Hazmat conducted air monitoring over a four-hour period during the incident and found that "only normal products [of] combustion of a structure fire were detected and at levels considered by the National Institute of Occupational Safety and Health and the Occupational Safety and Health Administration to be well below exposure thresholds" (Escondido 2024). Air

[1] According to U.S. Electric Power Research Institute (EPRI), there were fewer than 10 BESS failure events in the U.S. in 2023 (Simpson 2024).

[2] A joint study published in May 2024 by EPRI, the Pacific Northwest National Laboratory, and data analytics provider TWAICE reports that the rate of BESS failure incidents fell 97 percent between 2018 and 2023, with a chart in the study showing that it went from approximately 9.2 failures per gigawatt of BESSs deployed in 2018 to approximately 0.2 in 2023. (Colthorpe 2024).

monitoring conducted by a third-party contractor (Haley & Aldrich) also was initiated during the incident and continued for an additional 12 hours after the fire was fully extinguished. Haley & Aldrich found that "[a]t no time during the incident did the levels of oxygen deviate from 20.9 percent which is considered normal atmospheric level. Any decrease in the percentage of oxygen would indicate that there was some unknown gas in the atmosphere that was not able to be detected by monitoring equipment. Fortunately, no such deviation was detected. The use of fluoride reactive test strips was negative at all locations. Additionally, hydrofluoric acid was not detected at any of the sampling locations" (Escondido 2024). Water samples were also obtained from runoff created by fire suppression personnel. According to public documents, "The analysis of the samples collected from the runoff water suggests that the water quality is within acceptable limits for most contaminants, especially when considering public health standards for drinking water." The findings also state that "the low levels of metals detected, combined with the absence of more toxic elements like lead and cadmium, suggest that the water poses minimal risk both to human health and the environment" (Escondido 2024).

Furthermore, air quality monitoring and soil sample testing during and after the recent Vistra battery fire in Moss Landing, California, showed that there was no risk to the public throughout the incident, including hydrogen fluoride and particulate matter. Air monitoring was conducted by the USEPA, Vistra, and CTEH, LLC (County of Monterey 2025). The California Department of Toxic Substances Control conducted soil sample testing for heavy metals. While initial surface screening of ash and debris detected elevated levels of metals, subsequent soil samples did not (County of Monterey 2025). Drinking water was also tested for metals and found the reported levels within the normal drinking water standards and consistent with each water systems' historical data (County of Monterey 2025).

Additionally, in compliance with Public Utilities Code section 761.3, an emergency response and emergency action plan would be developed for the BESS facilities on site, which would ensure workers and nearby residents are evacuated quickly if evacuation is required. Moreover, internal road improvements and vegetation management proposed as part of the Project, and discussed below under Impact 3.20-3, would provide natural fire breaks and reduce the potential fuel load as compared to the existing site conditions. Due to the existing flat topography, lack of vegetation on the Project site, and the northwesterly direction of prevailing winds relative to the location of and distance to population centers, the Project is not likely to lead to the spread of wildfire or exacerbation of wildfire risk. Therefore, the Project would not, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. This impact would be **less than significant**.

Mitigation: None required.

Criterion c) Whether the Project would require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or result in temporary or ongoing impacts to the environment.

The Project does not propose and would not require the installation of fuel breaks or emergency water sources. Therefore, the Project would have no impact relating to these types of infrastructure, the installation or maintenance of which could exacerbate fire risk or result in temporary or ongoing impacts to the environment. The Project would have no impact in this regard. (*No Impact*)

Mitigation: None required.

Impact 3.20-3: The Heartland Solar Project would require the installation or maintenance of associated infrastructure (such as roads, power lines, or other utilities) that may exacerbate fire risk or result in temporary or ongoing impacts to the environment. (*Less-than-Significant Impact*)

The Project includes access and maintenance road improvements into and within the Project site and the construction and operation of medium voltage and high voltage power lines. It also includes other energy infrastructure that may exacerbate fire risk or result in temporary or ongoing impacts to the environment including inverters, a BESS, and a high voltage substation. As discussed under Impact 3.20-2, above, the Project would not significantly exacerbate fire risk. Further limiting the Project's potential to exacerbate fire risk as a result of associated infrastructure, the Project would be subject to the CBC and CFC requirements and design standards. As described in Section 2.5.1, *Heartland Solar Project Components*, the Project would include self-contained BESS modules that would be placed in racks within prefabricated metal enclosures adjacent to the onsite substation. Switchboards, integrated heating, ventilation, and air conditioning units, a fire detection system, inverters, and transformers would be provided. All electric lines would also be constructed according to industry standard and in compliance with applicable regulations.

Operation of the Project would include regular maintenance such as mowing and/or weed abatement activities, which would reduce vegetative fuels and ignition sources upon the site. Intermittent maintenance activities could increase the potential for ignition onsite due to the presence of vehicles and use of equipment; however, given the low frequency and nature of maintenance activities as well as the site topography, vegetation, and surrounding land uses, Project operation and maintenance would not significantly exacerbate existing wildfire risks.

Because the BESS, substation, and other components of the Project would be designed and constructed in a manner consistent with CBC and CFC standards, ignition sources and associated fire risk would be limited. Accordingly, the potential impact of the Project would be **less than significant** with no mitigation required.

Mitigation: None required.

Criterion d) Whether the Project would expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

The Heartland Solar Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. (*No Impact*)

Details about site drainage and associated erosion potential are provided in Section 3.11, *Hydrology and Water Quality*. Construction would involve grading and other soil disturbing activities that could alter site drainage. However, because the site is relatively flat and these activities would be subject to Fresno County grading and erosion control permit requirements, there is little risk for flooding, landslides, or post-fire slope instability. As described in Section 2.3, *Existing Land Uses*, the Project site is situated in a relatively unpopulated area, with no housing present on the Project site. Surrounding parcels are generally utilized for renewable energy or agricultural purposes. Therefore, the Project would not cause a significant risk, and no impact associated criterion d) would result.

Mitigation: None required.

3.20.3.3 Direct and Indirect Effects of the PG&E Components

As described in Section 2.5.2 in Chapter 2, *Project Description*, PG&E would implement infrastructure improvements to be constructed, owned, and operated by PG&E. This would include up to 1,000 linear feet of 230 kilovolt (kV) generation-tie (gen-tie) line extending from the offsite point of change of ownership pole to the existing PG&E-owned Tranquillity Switching Station, fiber lines, and other communications equipment owned and operated by PG&E. Other requisite PG&E work would include upgrades at the existing Tranquillity Switching Station, including the installation of a new 230 kV breaker-and-a-half configuration within the switching station. The upgrades made would be within the existing Tranquillity Switching Station footprint.

Impact 3.20-4: Construction of the PG&E Components could affect wildfire considerations by impairing emergency evacuation, if needed, or by introducing additional potential ignition sources into the environment. (*Less-than-Significant Impact*)

Construction of the PG&E Components may require lane closures or partial lane closures for the portions of the gen-tie line within the public roadways. Although there may be some temporary delays associated with this work, it is unlikely that full road closures would be required. Construction would not prevent emergency vehicles from traveling through the roadways. The partial lane closures would ensure that there is a safe distance between the work areas and the flow of traffic. Emergency vehicles would be allowed to pass, consistent with state law. The PG&E work within the Tranquillity Switching Station would not impair an emergency response or evacuation plan. The temporary delays associated with construction of the gen-tie line would result in a **less than significant impact**.

As discussed, all PG&E Components including the gen line and infrastructure at the Tranquillity Switching Station would be constructed according to industry standards and in compliance with applicable regulations. The PG&E Components would involve construction, operation, and maintenance of power lines and other infrastructure; related activities involve inherent risks for ignition. However, these components would not be located in a fire hazard severity zone or in or near wildlands. Nor would there be risks associated with slopes as the proposed sites are entirely flat. As discussed in the regulatory setting, there are a number of federal and state regulatory requirements pertaining to vegetation management along transmission lines that would apply to the PG&E Components. For example, because the Heartland Solar Project proposes to connect to the Tranquillity Switching Station via a 230 kV line, NERC's transmission vegetation management program requirements apply to the Project. The PG&E Components also would have to comply with state requirements such as the California Building and Fire Code as well as CPUC General Orders related to transmission planning, design, maintenance, and operation of utility corridors. CPUC General Order 95 contains vegetation clearance requirements; General Order 166 contains protocols the utility would be required to follow on "red flag" days (under high fire danger conditions). PG&E also has standard operating procedures to implement these regulatory requirements in the field during all phases of the work, which would help to reduce ignition risks. On this basis, the PG&E Components would not exacerbate fire risk or result in ongoing impacts on the environment. Impacts related to fire risk would be **less than significant**.

Mitigation: None required.

3.20.4 Cumulative Effects Analysis

The geographic context of the cumulative effects analysis includes the Project site and the areas immediately surrounding it. The timeframe during which cumulative effects could occur includes the time from when onsite activities commence for site preparation and construction to when onsite activities cease following decommissioning.

3.20.4.1 Cumulative Effects of the Heartland Solar Project

Criterion a)

Impact 3.20-1c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to substantial impairment of an adopted emergency response plan or emergency evacuation plan. (*Less-than-Significant with Mitigation Incorporated*)

As discussed under Impact 3.20-1, no adopted emergency response plan or emergency evacuation plan applies to the study area; therefore, any such routes would be determined by responders based on the specific geographic areas affected by a particular emergency. However, to reduce potential congestion or emergency response delay-related impacts, the Heartland Solar Project would comply with a Construction and Decommissioning Traffic Management Plan as part of **Mitigation Measure 3.18-1**, as described in Section 3.18, *Transportation*. With mitigation implemented, the Project's less-than-significant impact would combine with the incremental impacts of other projects identified in Section 3.1.3, *Cumulative Effects Approach*, that could cause traffic congestion of the streets that would be used for Project activities. Project traffic

would enter and leave the Project site via W. Adams Avenue (see Section 3.18, *Transportation*; see also, Figure 1-2 in Appendix K, *Traffic Impact Study*). Each of the intersections that would be affected by Project traffic currently operates well above the County's minimum standards, thus demonstrating that there is no existing adverse cumulative condition to which Project traffic could contribute. Other projects in the vicinity, including the existing Tranquillity and Adams East solar projects, the approved but not yet constructed Luna Valley, Scarlet, and Sonrisa solar projects, and the proposed Darden Clean Energy Project, all could contribute vehicles and incremental hazards to the same road network. However, the local network of paved and unpaved roads (as well as the undeveloped, generally flat nature of the area in general) provides multiple options for emergency and other vehicles to get to and past the Project site in the event an emergency response or evacuation is necessary. Therefore, the Heartland Solar Project's incremental, less-than-significant impact when combined with the incremental impacts of other cumulative projects would not cause or contribute to a significant cumulative impact. The Project would have a less than significant cumulative impact relating to criterion a).

Mitigation: Implement Mitigation Measure 3.18-1, Construction and Decommissioning Traffic Management Plan in Section 3.18, *Transportation*.

Significance after Mitigation: Less than significant.

Criterion b)

Impact 3.20-2c: The Heartland Solar Project would not cause or contribute to a significant cumulative effect by exacerbating wildfire risks due to slope, prevailing winds, or other factors. (*Less-than-Significant Impact*)

As discussed in Impact 3.20-2, the Heartland Solar Project would be located upon flat terrain, in a sparsely populated area. The proposed site is not in an area identified as a fire hazard severity zone. The proposed facilities would be designed and constructed in a manner adhering to independently enforceable requirements established to minimize risk to human health and safety and to the environment, including those included in the CBC and CFC. Other projects identified in Section 3.1.3, *Cumulative Effects Approach*, that could contribute ignition sources include the solar projects noted in the context of Impact 3.20-1c as well as power lines and other energy infrastructure, homes, and operating vehicles in the study area. Compliance with applicable laws and regulations would manage ignition sources. In light of the existing flat landscape, the general northwesterly direction of prevailing winds relative to potential ignition sources, and other factors, the combination of Project impacts with the incremental impacts of other projects in the cumulative scenario would not cause or contribute to a significant cumulative effect relating to the exacerbation of wildfire risk and any associated release of pollutants.

Mitigation: None required.

Criterion c)

Impact 3.20-3c: The Heartland Solar Project would not cause or contribute to a significant adverse cumulative effect due to roads, power lines, or other utilities the installation or maintenance of which could exacerbate fire risk or result in temporary or ongoing impacts to the environment. ***(Less-than-Significant Impact)***

As discussed, the study area is not conducive to the rapid spread of uncontrolled wildfire. While existing or proposed or reasonably foreseeable future land uses could result in cumulative sources of ignition, the construction and operation of solar facilities (including photovoltaic solar energy generation, energy storage systems, and related power lines for the Tranquillity, Adams East, Luna Valley, Scarlet, and Sonrisa solar projects that are operating, approved or under consideration in the immediate area) have not presented a significant risk with respect to ignition sources. Therefore, the Heartland Solar Project's cumulative impact would be less than significant.

Mitigation: None required.

Criteria d)

The Project would cause no impact due to the exposure of people or structures to significant risks, including downslope or downstream flooding or landslides, due to runoff, post-fire slope instability, or drainage changes. Therefore, the Project would not cause or contribute to any significant cumulative effect relating to criterion d). (*No Impact*)

Mitigation: None required.

3.20.4.2 Cumulative Effects of the PG&E Components

Impact 3.20-4c: Construction of the PG&E Components would cause impacts that contribute to cumulative effects on wildfire considerations. (*Less-than-Significant Impact*)

As discussed in Section 3.20.3.3, the PG&E Components would be located upon flat terrain, in a sparsely populated area. The proposed site is not in an area identified as a fire hazard severity zone. The proposed PG&E Components and other projects in the cumulative scenario would be designed, constructed, operated, and maintained in a manner adhering to independently enforceable requirements established to minimize risk to human health and safety and to the environment, including those included in the CBC and CFC. Projects in the cumulative scenario (described in Table 3.1-1 and depicted on Figure 3.1-1) include other transmission lines, such as the Manning 500/230 kV Substation Project and the various interconnections for other solar facilities. Considering their locations (not in a fire hazard severity zone), and the fact that there are low fuels and few trees or other vegetation in the vicinity of these projects, ignition risks are low. The clearance standards and vegetation management requirements would further reduce the low risk of line arcing or ignition of vegetation, once operational. Therefore, the PG&E Components would not result in an impact that would be cumulatively considerable. There is no existing significant cumulative impact, and the PG&E Components' incremental, less-than-significant contributions to fire risk when combined with the incremental impacts of other projects in the cumulative scenario would not cause one. Cumulative impacts would be **less than significant**.

Mitigation: None required.

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CHAPTER 4
Alternatives

The California Environmental Quality Act (CEQA) requires a lead agency to analyze a reasonable range of alternatives to a proposed project that could feasibly attain most of the basic objectives of the project while substantially reducing or eliminating significant environmental effects. CEQA also requires an Environmental Impact Report (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. This chapter describes the key considerations used to identify and screen potential alternatives, explains why some alternatives were eliminated from further consideration, and describes those alternatives that were carried forward for analysis. This section also compares the environmental advantages and disadvantages of the Heartland Solar Project and Pacific Gas and Electric Company (PG&E) Components (collectively, the Project) and alternatives evaluated in detail in this Draft EIR.

CEQA Guidelines section 15083(a) states that scoping can be helpful to agencies in identifying alternatives to be analyzed in an EIR. Fresno County (County) received no comments during the public scoping period for this Project regarding alternatives (Appendix A, *Scoping Report*).

4.1 Alternatives Development and Screening Process

The County screened and thereafter selected alternatives to be analyzed in greater detail based on the considerations listed in CEQA Guidelines section 15126.6, chiefly:

> *An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible…. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.*

Alternatives typically involve changes to the location, scope, design, extent, intensity, or methods of construction or operation of a proposed project. The range of alternatives for this Project has been selected based on the four screening factors enumerated below to foster meaningful public participation and informed decision making. The results of the screening process are presented in the sections that follow.

4.1.1 Screening Factor 1: Project Objectives

Screening factor one is whether a potential alternative would meet most of the basic project objectives. A project's statement of objectives describes the purpose of the project and the reasons for undertaking it. Alternatives that fail to meet the fundamental project purpose need not be addressed in detail in the EIR (*In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* [2008] 43 Cal.4th 1143). The project objectives for this Project identified in Section 2.4, *Project Objectives*, are repeated below for ease in reference:

1. Establish a photovoltaic (PV) renewable solar energy power-generating facility of a sufficient size and configuration to produce up to approximately 300 megawatts alternating current (MW_{AC}) of electricity in a cost-competitive manner.
2. Establish an energy storage system of a sufficient size and configuration to store up to approximately 300 MW_{AC} of electricity for at least four-hour discharge in a cost-competitive manner.
3. Assist California load-serving entities in meeting their obligations under California's Renewable Portfolio Standard (RPS) Program and Senate Bill 100, which calls for 60 percent of all electricity sold in California to come from renewable sources by 2030, and 100 percent by 2045.
4. Assist California load-serving entities in meeting their obligations under the California Public Utilities Commission's Energy Storage Framework and Design Program.
5. Provide for the economically viable, commercial financeable, and environmentally beneficial use of lands.
6. Develop a renewable PV solar energy and energy storage project in proximity to transmission infrastructure in order to minimize environmental impacts.
7. Create jobs and tax revenue for Fresno County.

4.1.2 Screening Factor 2: Potential Feasibility

Screening factor two is whether the potential alternative would be "potentially feasible." In this context, *feasible* means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (Public Resources Code §21061.1; CEQA Guidelines §§15126.6, 15364). According to CEQA Guidelines section 15126.6(f)(1), "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 (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives." Although EIRs must contain a discussion of potentially feasible alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by lead agency decision-makers who may consider evidence beyond that found in this EIR (Public Resources Code §21081[a][3]).

4.1.3 Screening Factor 3: Avoidance or Substantial Reduction of Significant Impacts of the Project

Screening factor three is whether a potential alternative would be able to avoid or substantially lessen any of the potentially significant impacts of the Project. As analyzed in Chapter 3, *Environmental Analysis*, the Project would cause no significant unavoidable impact to any of the resource considerations. Because the Project would not result in any significant unavoidable adverse environmental impacts after the implementation of mitigation, screening factor three focused on identifying alternatives that could reduce one or more of the potentially significant impacts of the Project as proposed. The Project would, unless mitigated, cause potential significant impacts relating to the following resources:

a. **Biological Resources**: The Project could have a substantial adverse effect, either directly or through habitat modifications, both at the Project level and cumulatively on: San Joaquin kit fox (*Vulpes macrotis mutica*), which is federally listed as endangered and state-listed as threatened; burrowing owl (*Athene cunicularia*), a candidate species; American badger (*Taxidea taxus*), a California Species of Special Concern; and nesting birds, including Swainson's hawk (*Buteo swainsoni*), a state-listed threatened species, and other raptors (see Impact 3.5-1in Section 3.5). The Project could conflict (both at the Project level and cumulatively) with Fresno County General Plan goals or policies protecting biological resources, such as protecting fish and wildlife habitat (Impact 3.5-3 and Impact 3.5-3c).

b. **Cultural Resources**: The Project could result in a significant impact due to an inadvertent discovery of cultural resources, potentially including historical or archaeological resources (Impact 3.6-1 and Impact 3.6-1c in Section 3.6), previously unidentified human remains (Impact 3.6-2 and Impact 3.6-2c), and/or archaeological resources that also are tribal cultural resources (Impact 3.6-3 and Impact 3.6-3c).

c. **Geology Soils and Paleontological Resources**: At the project level and cumulatively, the Heartland Solar Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Impact 3.8-6 and 3.8-6c in Section 3.8).

d. **Hazards**: The Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials pursuant to cleanup of illegal dump sites, unless that work is completed before the Applicant obtains site control of the affected area (Impact 3.10-1 in Section 3.10).

e. **Hydrology and Water Quality**: At the project level and cumulatively, the Project could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality (Impact 3.11-1 and 3.11-1c in Section 3.11), as well as alter the existing drainage pattern (Impact 3.11-3 and Impact 3.11-3c). The Project could also conflict with or obstruct implementation of the Basin Plan of GSP (Impact 3.11-4 and Impact 3.11-4c).

f. **Noise**: At the project level and cumulatively, the Project could, due to activities during nighttime hours, generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance (Impact 3.14-1 and Impact 3.14-1c in Section 3.14).

g. **Transportation**: At the project level and cumulatively, the Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway

facilities (Impact 3.18-1 and Impact 3.18-1c) and could result in inadequate emergency access (Impact 3.18-4, and Impact 3.18-4c).

h. **Utilities and Service Systems**: Project could result in new stormwater drainage (Impact 3.19-2 in Section 3.19).

i. **Wildfire**: At the project level and cumulatively, the Project could impair an adopted emergency response plan or emergency evacuation plan (Impact 3.20-1 and Impact 3.20-1c in Section 3.20).

4.1.4 Screening Factor 4: Remote or Speculative

Screening factor four is whether the implementation of a potential alternative is remote or speculative (14 California Code of Regulations section 15126.6[f][2]). A lead agency may conclude than an alternative is remote or speculative if significant changes in governmental policy or legislation would be needed to carry it out or if it is unlikely as a practical matter to be carried out within the reasonable future or is contingent on the occurrence of uncertain future events. In *Bowman v. City of Petaluma* (1986) 185 Cal.App.3d 1065, for example, the Court upheld a lead agency's conclusion that added delay made an alternative infeasible on the basis of its resulting in "years of additional delay while [it] was designed, designs were approved, rights of way were secured by purchase or eminent domain, an independent environmental review was pursued to completion, and [it] was finally built."). Eliminating unrealistic or conjectural alternatives from detailed analysis in the EIR allows decision makers and members of the public to focus on alternatives capable of being approved and carried out in lieu of the project as proposed.

4.2 Alternatives Rejected from Detailed Consideration

Any alternative determined not to meet most of the basic project objectives; to be infeasible, or not to be able to avoid or substantially lessen one or more potential significant impacts of the Project; or to be either remote or speculative was not carried forward for detailed consideration. A brief description and rationale for not carrying forward alternatives that failed the screening process are provided below.

4.2.1 Alternative Sites

The Applicant's approach to initial site evaluation and selection was to find a business-reasonable balance of the results of an environmental constraints analysis, permitting challenges, and Project needs. Primary selection criteria included:

- Minimizing the complexity of a grid connection (including logistical and cost considerations) by finding sites within 5 miles of the Tranquillity Switching Station.
- Minimizing the number of landowners needed to aggregate a site of sufficient size to accommodate a PV solar facility with generation capacity of approximately 300 MW; and
- Identifying sites that are otherwise suitable for the proposed use based on the adequacy of roadways, separation from residences, and because they were both relatively flat and outside of a 100-year floodplain.

Table 4-1, *Screening Summary: Alternative Sites*, indicates that an alternative site would not be potentially feasible because no other site meets the primary site search criteria. This conclusion is based on Applicant team input, review of land allocated to existing and proposed uses within 15 miles of the Project site, Google Earth imagery searches, and related desktop inquiries.

TABLE 4-1
SCREENING SUMMARY: ALTERNATIVE SITES

Screening Considerations	Pass/Fail	Rationale
Would the alternative meet most of the basic Project objectives?	Pass	This alternative would meet most of the Project objectives.
Would the alternative be potentially feasible?	Fail	No other sites meet the primary site search criteria.
Would the alternative avoid or substantially lessen any of the potential significant impacts of the Project?	Pass	An alternative site could avoid or substantially reduce a potential significant Project impact on nesting raptors.
Would implementation of the alternative be remote or speculative?	Fail	Development of the Project on a different site would be remote or speculative because it would be unlikely as a practical matter to be carried out within the reasonable future as a result of the time required for site suitability evaluations, outreach to one or more landowners to assess willingness and availability, and project design, environmental review and permitting. Further, if other regional sites were identified as suitable, pursuit of renewable energy development in one or more of those locations would more likely be in addition to the proposed site and not instead of it.
CONCLUSION: ***This alternative fails to meet the screening criteria because it would be infeasible and remote or speculative.***		

4.2.2 Brownfields or Underutilized Lands

Other potential alternative sites could include brownfields, closed landfills, Superfund sites, Resource Conservation and Recovery Act sites or closed mine lands. The County researched potentially contaminated and underutilized sites identified as appropriate for solar-PV projects as part of the U.S. Environmental Protection Agency's (USEPA) Re-Powering Mapper project's Re-Powering Screening Dataset, which provides details for more than 190,000 sites nationwide, and nearly 9,000 sites in California, that have been pre-screened for renewable energy potential) to identify potential utility-scale solar PV energy sites in Fresno County, that were located on existing contaminated lands, landfills, or mines (USEPA 2023). For purposes of the screening tool, the USEPA and the National Renewable Energy Lab identified sites as potentially suitable for utility scale PV solar development if the site was 35 acres or larger, the distance to transmission was less than or equal to 10 miles, and if the distance to graded roads also was less than or equal to 10 miles, with a caveat: "Other critical factors for siting renewable energy facilities (e.g., slope), should be considered on a site-by-site basis" (USEPA 2023).

This effort resulted in the identification of 220 contaminated land sites in Fresno County, 23 of which were noted as suitable for utility-scale PV solar development. Of the 23 sites, none is expected to have the capacity to generate 300 MW, and only two of the sites are expected to have

the capacity to generate more than 30 percent of the megawatt output of the Project as proposed (i.e., at least 120 MW):

- The Fresno Air Terminal/Old Hammer Field (J09CA0823) site located at McKinley and Clovis Avenues in Frenso is expected to have capacity to generate approximately 230 MW
- The Mount Owen Rifle Range - IR/MMRP (J09CA0877) located approximately 6 miles northeast of Clovis is expected to have capacity to generate approximately 240 MW.

Table 4-2, *Screening Summary: Potential Brownfield Sites*, indicates that both of these locations would be infeasible and remote or speculative.

TABLE 4-2
SCREENING SUMMARY: POTENTIAL BROWNFIELD SITES

Screening Considerations	Pass/Fail	Rationale
Would the alternative meet most of the basic Project objectives?	Pass	The Fresno Air Terminal Site would meet most of the Project objectives although it would be expected to produce only approximately 77% of the 300 MW_{AC} of solar energy proposed by the Project, and presumably (based on scaling) also only 77% of the proposed storage capacity. The Mount Owen site would have approximately 80percent of the generation and storage capacity of the project as proposed. Neither of these brownfield sites would provide for the beneficial use of lands that have physically impaired agricultural capacity, but both would provide for the beneficial use of lands enrolled in the Department of Toxic Substances Control's cleanup program.
Would the alternative be potentially feasible?	Fail	This alternative would not be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, and social factors. Documented site contamination of the Fresno Air Terminal site affects soils and an aquifer used for drinking water supply, including a drinking water well (DTSC 2025a). Because project development would disturb contaminated soils, the alternative would result in hazards and hazardous materials impacts that would not be caused by the Project. Further, the costs and potential liability associated with the risk of being added to a list of potentially responsible parties liable for site cleanup is expected to deter a renewable energy project developer. The Mount Owen site soils are contaminated with unexploded ordinance and munitions debris; the site may have been used in the past for rocket testing (DTSC 2025b). Uncertainties about the extent and nature of contamination and resulting uncertainty about the allocation of potential liabilities render this potential alternative infeasible.
Would the alternative avoid or substantially lessen any of the potential significant impacts of the Project?	Pass	The alternative could avoid or substantially reduce a potential significant Project impact on noise because the site is farther from potential sensitive receptors.
Would implementation of the alternative be remote or speculative?	Fail	Development of the Project on a different site would be remote or speculative because it would be unlikely as a practical matter to be carried out within the reasonable future as a result of the time required for site suitability evaluations and project design, environmental review and permitting. Further, if it seems speculative to assume that development would occur on a site that's undergoing active remediation,
CONCLUSION: ***This alternative fails to meet the screening criteria because it would be infeasible and remote or speculative.***		

4.3 Alternatives Evaluated in Detail in this EIR

4.3.1 No Project Alternative

CEQA Guidelines section 15126.6(e) requires consideration of a No Project Alternative. This analysis discusses the existing conditions on or about October 24, 2022, when the Notice of Preparation was issued for this Draft EIR, 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.

Under the No Project Alternative, the proposed solar energy generation and battery energy storage system site would continue to be used for dry-farmed agriculture and/or left fallow. The Project site is designated "Agriculture" as shown on Fresno County General Plan Countywide Land Use Diagram Figure LU-1a (Fresno County 2000) and are zoned AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) (Fresno County 2023). 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. 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 use is continued as it exists under pre-Project conditions.

Under a no-development scenario, the Project site would continue to be intermittently dry farmed for grain or forage crops or lay fallow and other conditions of the existing environmental setting would be maintained. Changes to that setting would not occur, including alteration of the landscape (visual resources, wildlife habitat, and land use/agriculture), noise, and ground-disturbance and related impacts to cultural tribal cultural resources and wildlife habitat. Benefits relating to renewable energy generation and energy storage (such as reduced greenhouse gas emissions by reducing the reliance on fossil fuel power plants and increased regional power grid stability) would not be realized from the proposed development of the site. Although **Table 4-3** shows that the No Project Alternative fails to satisfy all of the screening criteria, this alternative nonetheless has been carried forward for more detailed review in accordance with CEQA.

TABLE 4-3
SCREENING SUMMARY: NO PROJECT ALTERNATIVE

Screening Considerations	Pass/Fail	Rationale
Would the alternative meet most of the basic Project objectives?	Fail	The No Project Alternative would not meet any of the Project objectives.
Would the alternative be potentially feasible?	Pass	The No Project Alternative could be accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors because it is expected to be what would occur if the Project were not approved.
Would the alternative avoid or substantially lessen any of the potential significant impacts of the Project?	Pass	The No Project Alternative would avoid all of the Project's potential significant impacts. It also would cause no new impacts on the physical environment; i.e., existing land uses would continue to affect environmental conditions as they currently do.
Would implementation of the alternative be remote or speculative?	Pass	The No Project Alternative is neither remote nor speculative. On the contrary, it is what is expected to occur if the Project is not approved.
CONCLUSION: ***Although the No Project Alternative fails to satisfy all of the screening criteria, it nonetheless has been carried forward for more detailed review in accordance with the requirements of CEQA.***		

4.3.2 Alternative 1: Reduced PV Solar Acreage Alternative

Alternative 1 would include all of the components of the Project as proposed but would reduce the Project footprint from approximately 2,310 acres to approximately 1,352 acres by eliminating solar energy generation-related development in the approximately 958 acres located north of W. Lincoln Avenue, south of W. American Avenue, west of State Route 33 and east of S. Los Angeles Avenue. The 59-acre reduction in the size of the solar array area would result in a corresponding reduction in power output and energy storage capacity. As reduced, Alternative 1's solar panel arrays would be capable of generating 176 MWAC and the energy storage capacity is expected to be comparable.

TABLE 4-4
SCREENING SUMMARY: ALTERNATIVE 1

Screening Considerations	Pass/Fail	Rationale
Would the alternative meet most of the basic Project objectives?	Pass	Alternative 1 would meet most of the Project objectives.
Would the alternative be potentially feasible?	Pass	Alternative 1 could be accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.
Would the alternative avoid or substantially lessen any of the potential significant impacts of the Project?	Pass	Alternative 1 would have the potential to avoid or substantially reduce those of the Project's potential significant impacts that are based on site disturbance, including aesthetics, foraging or nesting bird habitat, and cultural resources.
Would implementation of the alternative be remote or speculative?	Pass	Alternative 1 is neither remote nor speculative.
CONCLUSION: ***Alternative 1 passes the screening criteria and so has been carried forward for more detailed review.***		

4.3.3 Alternative 2, Distributed Solar Alternative

Under Alternative 2, the Distributed Solar Alternative, a number of geographically distributed solar PV systems would be developed on existing rooftops throughout Fresno County. Based on a search conducted July 8, 2025, Google's Project Sunroof effort identified 94 percent of the buildings in Fresno County as "solar viable," where viability is based on each roof having a total potential installation size of at least 2 kW, and each solar panel receiving at least 75 percent of the maximum annual sun in the County based on National Renewable Energy Lab weather station data (Google Project Sunroof Data Explorer 2019). Alternative 2 would contribute to grid reliability and resilience, increase energy efficiency and renewable energy, and use smart grid and zero-net energy technologies. Under this alternative, all panels would be flush-mounted with the roof. No new land would be developed or altered; however, depending on the type of solar modules installed, a similar or greater amount of acreage (i.e., 2,362 acres or more of total rooftop area) may be required to attain the Project's 300 MW of solar PV generating capacity. Vehicle trips needed to support construction and maintenance activities would be dispersed in accordance with the individual site locations. Like the Project, Alternative 2 would be designed to operate year-round using PV panels to convert solar energy directly to electrical power. Energy generated either would be for on-site use only, or could be shared via a community solar arrangement that lets multiple customers share power from a single local solar source. Power generated by such distributed solar PV systems typically would not require the construction of new electrical substation or transmission facilities. However, Alternative 2 would not be expected to include battery storage to store unused solar energy and, thus, the solar power could only be used during daylight hours.

TABLE 4-5
SCREENING SUMMARY: ALTERNATIVE 2

Screening Considerations	Pass/Fail	Rationale
Would the alternative meet most of the basic Project objectives?	Pass	Alternative 2 would meet most of the Project objectives, although it would not provide a new source of energy storage or assist California in meeting its obligations under California's RPS Program.
Would the alternative be potentially feasible?	Pass	Alternative 2 could be accomplished in a successful manner, taking into account economic, environmental, legal, social, and technological factors, although it would not proceed within a reasonably similar timeframe as the Project.
Would the alternative avoid or substantially lessen any of the potential significant impacts of the Project?	Pass	Alternative 2 would have the potential to avoid or substantially reduce those of the Project's potential significant impacts on biological resources and cultural resources.
Would implementation of the alternative be remote or speculative?	Pass	Alternative 2 is not speculative, but given the size of the project and the need to arrange a suitable assemblage of participating commercial and industrial properties, it may be impractical to propose a distributed generation project and proceed within a reasonably similar timeframe of the project.
CONCLUSION: ***Alternative 2 passes the screening criteria and so has been carried forward for more detailed review.***		

The Project proponent does not have immediate control or access to potential urban sites that could accommodate facilities to generate the solar power and, given the size of the project and the need to arrange a suitable assemblage of participating commercial and industrial properties, a distributed generation project of this type would not proceed within a reasonably similar timeframe as the Project. However, it preliminarily has been determined that Alternative 2 could avoid the Project's potential significant impacts on biological resources (including San Joaquin kit fox, burrowing owl, American badger, and birds) and cultural resources (including inadvertent discovery of historical or archaeological resources, previously unidentified human remains, and/or archaeological resources that also are tribal cultural resources).

4.4 Comparison of Alternatives

The comparison of alternatives provided in **Table 4-6**, *Summary of Impacts of the Project and Alternatives,* is designed to satisfy the requirements of CEQA Guidelines section 15126.6(d), which states:

> *The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.*

4.5 Environmentally Superior Alternative

The CEQA Guidelines define the *environmentally superior alternative* as that alternative with the least adverse impacts on the project area and its surrounding environment. The No Project Alternative would avoid all impacts of the Project and instead would result in the environmental benefits and consequences that reasonably would be expected to occur based on the site's current use non-irrigated or fallowed agricultural land. Therefore, for this Project, the No Project Alternative is considered the environmentally superior alternative for CEQA purposes. However, the No Project Alternative would fail to meet the basic objectives of the Project. Since 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 §15126.6(e)(2)).

Determining an environmentally superior alternative can be difficult because of the many factors that must be balanced. For example, Alternative 2 could be preferred because, relative to the Project, it would use existing rooftop spaces, minimizing land disturbance which would reduce impacts on the physical environment. In contrast, the Project could be preferred because, relative to Alternative 2, it would have a greater impact on reducing reliance on the overall grid's fossil fuel consumption and has potential to preserve potential future use of the Project site for more productive agricultural uses following project decommissioning and site restoration. Unlike Alternative 2, the Project would assist the State of California in achieving or exceeding its RPS under SB 350, SB 100, and the California Global Warming Solutions Act (AB 32), and provide a

new source of energy storage that assists the state in achieving or exceeding its energy storage mandate. Also, as noted, the Project would not result in any significant and unavoidable impacts, so environmental impacts would be less than significant for all resource areas under either the Project or Alternative 2. Additional information received in or developed during the agency and public review period for the Draft EIR or during the Project approval process that could affect the balancing of the respective benefits and consequences of the alternatives. Accordingly, while a preliminary determination has been made that the Project would be the Environmentally Superior Alternative, it would be premature to formally designate it as such at this stage. This preliminary determination as to which alternative is the Environmentally Superior Alternative will be confirmed or corrected in the Final EIR.

TABLE 4-6
SUMMARY OF IMPACTS OF THE PROJECT AND ALTERNATIVES

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Aesthetics			
Impact 3.2-1: LTS. The Heartland Solar Project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. **Impact 3.2-2:** LTS. The Heartland Solar Project would not create new sources of light or glare that would adversely affect day or nighttime views in the area. **Impact 3.2-3:** LTS. The PG&E Components would affect aesthetic resources. **Impact 3.2-1c:** LTS. The Heartland Solar Project would not cause or contribute to any cumulative effect related to the degradation of the existing visual character or quality of public views of the site and its surroundings. **Impact 3.2-2c:** LTS. The Heartland Solar Project would not cause or contribute to any cumulative effect related to a new source of light and glare which would adversely affect day or nighttime views in the area. **Impact 3.2-3c:** LTS. The PG&E Components would not cause a cumulatively considerable contribution to a significant cumulative effect on aesthetic resources.	**Overall: less than the Project** • **Impact 3.2-1:** No Impact (less than the Project) because no Project-related development would occur on-site that could degrade the existing visual character or quality of public views of the site and its surroundings. • **Impact 3.2-2:** No Impact (less than the Project) because no Project-related development would create a new source of light or glare that would adversely affect day or nighttime views in the area. • **Impact 3.2-3:** No Impact (less than the Project) because the No Project Alternative would not involve the construction or operation and maintenance of the PG&E Components. • **Impact 3.2-1c:** No Impact (less than the Project) because the No Project Alternative would not cause any incremental impact that could combine with the incremental impacts of past, present, or reasonably foreseeable future projects to cause or contribute to an adverse cumulative effect. • **Impact 3.2-2c:** No Impact (less than the Project) because the No Project Alternative would not cause or contribute to any cumulative effect related to a new source of light and glare which would adversely affect day or nighttime views in the area. • **Impact 3.2-3c:** No Impact (less than the Project) because the No Project Alternative would not involve the construction or operation and maintenance of the PG&E Components and therefore could not cause or contribute to any cumulative effect on aesthetic resources.	**Overall: same as the Project** • **Impact 3.2-1:** LTS (same as the Project) because, although elements of the Project components would be visible and the visual character of the site would be altered compared to existing conditions, for reasons similar to those described for the Project, Alternative 1 would result in a substantially similar impact related to alteration of the visual character of the site. • **Impact 3.2-2:** LTS (same as the Project) because Alternative 1 would create new sources of light or glare but would not cause a significant impact on day or nighttime views in the area. • **Impact 3.2-3:** LTS (same as the Project) because Alternative 1 would involve the same activities associated with the PG&E Components and would therefore impact aesthetic resources in the same manner. • **Impact 3.2-1c:** LTS (same as the Project) because Alternative 1 would cause the incremental contributions noted above, but none would be cumulatively considerable for reasons similar to those described for the Project as proposed. • **Impact 3.2-2c:** LTS (same as the Project) because Alternative 1 would cause the incremental contributions noted above related to a new source of light and glare which would adversely affect day or nighttime views in the area, but none would be cumulatively considerable for reasons similar to those described for the Project as proposed. • **Impact 3.2-2c:** LTS (same as the Project) because Alternative 1 would involve the same activities associated with the PG&E Components and therefore would have the same potential to contribute to cumulative impacts on aesthetic resources.	**Overall: less than the Project** • **Impact 3.2-1:** No Impact (less than the Project) because no Project-related development would occur on-site that could degrade the existing visual character or quality of public views of the site and its surroundings. • **Impact 3.2-2:** No Impact (less than the Project) because no Project-related development would create a new source of light or glare that would adversely affect day or nighttime views in the area. • **Impact 3.2-3:** No Impact (less than the Project) because Alternative 2 would not involve the construction or operation and maintenance of the PG&E Components. • **Impact 3.2-1c:** No Impact (less than the Project) because Alternative 2 would not cause any incremental impact that could combine with the incremental impacts of past, present, or reasonably foreseeable future projects to cause or contribute to an adverse cumulative effect. • **Impact 3.2-2c:** No Impact (less than the Project) because Alternative 2 would not cause or contribute to any cumulative effect related to a new source of light and glare which would adversely affect day or nighttime views in the area. • **Impact 3.2-3c:** No Impact (less than the Project) because Alternative 2 would not involve the construction or operation and maintenance of the PG&E Components and therefore could not cause or contribute to any cumulative effect on aesthetic resources.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Agriculture and Forestry Resources			
Impact 3.3-1: LTS. The Heartland Solar Project would involve changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. The Project would not directly convert any Farmland and the Land Evaluation and Site Assessment found no significant impacts to the site or its zone of influence. Therefore, indirect impacts related to conversion of Farmland to non-agricultural use would be less than significant. **Impact 3.3-1c:** LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to changes caused in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.	**Overall: less than the Project** • **Impact 3.3-1:** No Impact (less than the Project) because if the No Project Alternative were to be implemented, then none of the proposed Project-related development would take place. Because there would be no change relative to baseline conditions, no Project-related development would cause changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. • **Impact 3.3-1c:** No Impact (less than the Project) because if the No Project Alternative were to be implemented, then none of the proposed Project-related development would take place and there would be no cumulatively considerable effect.	**Overall: same as the Project** • **Impact 3.3-1:** LTS (same as the Project). Because Alternative 1 would entail development of the site with the same components albeit on a reduced size of the Project site, there would be impacts similar to the Project related to changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. • **Impact 3.3-1c:** LTS (same as the Project). Because Alternative 1 would entail development of the site with the same components albeit on a reduced size of the Project site, it would have the same potential as the Project to cause or contribute to a significant cumulative effect due to changes caused in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.	**Overall: less than the Project** • **Impact 3.3-1:** No Impact (less than the Project) because if Alternative 2 were to be implemented, then none of the proposed Project-related development would take place. Because there would be no change relative to baseline conditions, no Project-related development would cause changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. • **Impact 3.3-1c:** No Impact (less than the Project) because if Alternative 2 were to be implemented, then none of the proposed Project-related development would take place and there would be no cumulatively considerable effect.
Air Quality			
Impact 3.4-1: LTS. Criteria pollutant emissions generated by the Heartland Solar Project could conflict with the SJVAPCD's air quality plans. **Impact 3.4-2:** LTS. The Heartland Solar Project would result in net increases of criteria pollutants for which the Project region is non-attainment under federal and/or state ambient air quality standards. **Impact 3.4-3:** LTS. The Heartland Solar Project could expose sensitive receptors to substantial pollutant concentrations. **Impact 3.4-4:** LTS. The Heartland Solar Project's ground-disturbing activities could expose sensitive receptors to the risk of contracting Valley Fever. **Impact 3.4-5:** LTS. The Heartland Solar Project could generate odor or dust emissions.	**Overall: less than the Project** • **Impact 3.4-1:** No Impact (less than the Project) because no criteria pollutant emissions would be generated that could conflict with SJVAPCD's air quality plans. • **Impact 3.4-2:** No Impact (less than the Project) because no emissions would be generated that could contribute to violations of ambient air quality standards. • **Impact 3.4-3** No Impact (less than the Project) because the No Project Alternative would not expose sensitive receptors to substantial pollutant concentrations to a level above baseline conditions. • **Impact 3.4-4:** No Impact (less than the Project) because the No Project Alternative would not involve any ground-disturbing activities that could expose sensitive receptors to the risk of contracting Valley Fever.	**Overall: less than the Project** • **Impact 3.4-1:** LTS (similar to but less than the Project) because Alternative 1-related development would occupy fewer acres than the Project, resulting in less surface disturbance, less construction dust, and reduced overall construction, operation, maintenance, and decommissioning emissions compared to the Project. Criteria pollutant emissions generated by Alternative 1 would be similar to but less than the project and, similar to the Project, could conflict with SJVAPCD's air quality plans. • **Impact 3.4-2:** LTS (similar to but less than the Project) because the reduced footprint would generate incrementally fewer emissions than the Project and, like the Project, would not contribute to violations of ambient air quality standards.	**Overall: less than the Project** • **Impact 3.4-1:** LTS (less than the Project) because fewer Alternative 2-related development criteria pollutant emissions would be generated that could conflict with SJVAPCD's air quality plans. Rooftop construction would require less heavy construction equipment and vehicles than construction of the proposed ground-mount system. • **Impact 3.4-2:** LTS (less than the Project) because fewer Alternative 2-related development emissions would be generated that could contribute to violations of ambient air quality standards. • **Impact 3.4-3:** LTS (less than the Project) because fewer Alternative 2-related development pollutants would be emitted that could expose sensitive receptors to substantial pollutant concentrations.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.4-6: LTS. The PG&E Components would affect air quality. **Impact 3.4-1c:** LTS. Criteria pollutant emissions generated by the Heartland Solar Project would not cause a cumulatively considerable contribution to a significant cumulative effect due to a conflict with the SJVAPCD's air quality plans. **Impact 3.4-2c:** LTS. The Heartland Solar Project would not result in a cumulatively considerable net increase of criteria pollutants for which the Project region is non-attainment under federal and/or state ambient air quality standards. **Impact 3.4-3c:** LTS. The Heartland Solar Project would not contribute to a significant cumulative effect relating to the exposure of sensitive receptors to substantial pollutant concentrations. **Impact 3.4-4c:** LTS. The Heartland Solar Project would not contribute to a significant cumulative effect due to ground-disturbing activities that could expose sensitive receptors to the risk of contracting Valley Fever. **Impact 3.4-5c:** LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the generation of odor or dust emissions. **Impact 3.4-6c:** LTS. The PG&E Components would not cause a cumulatively considerable contribution to a significant cumulative effect on air quality.	• **Impact 3.4-5**: No Impact (less than the Project) because the No Project Alternative would not generate odor or dust emissions. • **Impact 3.4-6:** No Impact (less than the Project) because the No Project Alternative would not involve the construction or operation and maintenance of the PG&E Components. • **Impact 3.4-1c-6c:** No Impact (less than the Project) because the No Project Alternative would result in no impacts on air quality and therefore could not cause or contribute to any cumulatively considerable effect.	• **Impact 3.4-3:** LTS (similar to but less than the Project) because the reduced footprint would lessen the degree to which sensitive receptors could be exposed to substantial pollutant concentrations. • **Impact 3.4-4:** LTS (similar to but less than the Project) because, although similar activities to the Project would occur under Alternative 1, the reduced footprint would lessen the degree to which sensitive receptors could be exposed to the risk of contracting Valley Fever. • **Impact 3.4-5:** LTS (similar to but less than the Project) because the reduced footprint would generate incrementally fewer odor or dust emissions than the Project. • **Impact 3.4-6:** LTS (same as the Project) because Alternative 1 would involve the same activities associated with the PG&E Components and would therefore impact air quality in the same manner. • **Impact 3.4-1c:** LTS (similar to but less than the Project) because Alternative 1 would generate fewer criteria pollutant emissions that would contribute to a significant cumulative effect related to a conflict with SJVAPCD's air quality plans. • **Impact 3.4-2c:** LTS (similar to but less than the Project) because Alternative 1 would generate fewer emissions than the Project and would not contribute to a significant adverse cumulative impact related to violations of ambient air quality standards. • **Impact 3.4-3c:** LTS (similar to but less than the Project) because Alternative 1 would result in reduced exposure of sensitive receptors to substantial pollutant concentrations and therefore a reduced contribution to related cumulative impacts.	• **Impact 3.4-4:** LTS (less than the Project) because fewer Alternative 2-related development pollutants would be emitted that could expose sensitive receptors to the risk of contracting Valley Fever. • **Impact 3.**4-5: LTS (less than the Project) because fewer odor or dust emissions would be generated under Alternative 2. • **Impact 3.4-6:** No Impact (less than the Project) because Alternative 2 would not involve the construction or operation and maintenance of the PG&E Components. • **Impact 3.4-1c:** LTS (less than the Project) because fewer Alternative 2-related development activities would occur that could emit criteria pollutants that could cause or contribute to any cumulative effect due to a conflict with SJVAPCD's air quality plans. • **Impact 3.4-2c:** LTS (less than the Project) because fewer Alternative 2-related activities would occur that would cause emissions that could cause or contribute to a cumulative impact due to violations of ambient air quality standards. • **Impact 3.4-3c:** LTS (less than the Project) because fewer Alternative 2-related activities would occur that would expose sensitive receptors to substantial pollutant concentrations and thereby cause or contribute to a significant cumulative effect. • **Impact 3.4-4c:** LTS (less than the Project) because fewer Alternative 2-related activities would occur that would expose sensitive receptors to the risk of contracting Valley Fever and thereby cause or contribute to a significant cumulative effect.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
		• **Impact 3.4-4c:** LTS (similar to but less than the Project) because Alternative 1 would result in reduced exposure of sensitive receptors to the risk of contracting Valley Fever and therefore a reduced contribution to related cumulative impacts. • **Impact 3.4-5c:** LTS (similar to but less than the Project) because the reduced footprint would generate incrementally fewer odor or dust emissions and therefore an incrementally smaller contribution to cumulative effects. • **Impact 3.4-6c:** LTS (same as the Project) because Alternative 1 would involve the same activities associated with the PG&E Components and would therefore have the same potential to cause or contribute to a significant cumulative effect on air quality.	• **Impact 3.4-5c:** LTS (less than the Project) because Alternative 2 would result in fewer odor or dust emissions and would not cause or contribute to a significant cumulative effect due to the generation of odor or dust emissions. • **Impact 3.4-6:** No Impact (less than the Project) because Alternative 2 would not involve the construction or operation and maintenance of the PG&E Components and therefore could not cause a cumulative effect on air quality.
Biological Resources			
Impact 3.5-1: LTSM. The Heartland Solar 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 or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. The implementation of Mitigation Measure 3.5-1 (which includes construction-related protections for San Joaquin kit fox, burrowing owl, and American badger), Mitigation Measure 3.5-2 (which requires environmental awareness program training for Project workers as well as the implementation of specified BMPs for biological resources), and Mitigation Measure 3.5-3 (which includes protections for nesting birds, including Swainson's hawk and other raptors) would reduce the Heartland Solar Project's potential significant impact to LTS. **Impact 3.5-2**: LTS. The Heartland Solar Project could interfere with the movement of native resident or migratory wildlife species.	**Overall: less than the Project** • **Impact 3.5-1**: No Impact (less than the Project) because no Project-related activities would occur that could affect any species. The mitigation measures recommended for the Project would be required. • **Impact 3.5-2**: No Impact (less than the Project) because no Project-related activities would occur that could affect the movement of native resident or migratory wildlife species. • **Impact 3.5-3**: No Impact (less than the Project) because no Project-related activities would occur that could conflict with local policies or ordinances. None of the mitigation measures recommended for the Project would be required. • **Impact 3.5-4**: No Impact (less than the Project) because no PG&E Components-related activities would occur that could affect biological resources.	**Overall: less than the Project** • **Impact 3.5-1**: LTSM (less than the Project) because Alternative 1 would avoid potential adverse impacts on 59 acres relative to the Project. Although Alternative 1 would reduce potential impacts relative to the Project, the impact conclusion would remain the same because potential significant impacts to San Joaquin kit fox, burrowing owl, American badger, and nesting birds, including Swainson's hawk and other raptors could still occur. Therefore, Mitigation Measures 3.5-1, 3.5-2, and 3.5-3 would be required. • **Impact 3**.5-2: LTS (similar to but less than the Project) because Alternative 1 could interfere with the movement of native resident or migratory wildlife species, but the reduced Project size would incrementally lower the potential for this to occur.	**Overall: less than the Project** • **Impact 3.5-1:** No Impact (less than the Project) because rooftop development would not affect habitat for protected species identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. • **Impact 3.5-2**: No Impact (less than the Project) because rooftop development would not affect the movement of native resident or migratory wildlife species. • **Impact 3.5-3:** No Impact (less than the Project) because rooftop development would not affect consistency with local policies or ordinances protecting biological resources, such as the tree preservation policy or ordinance. • **Impact 3.5-4**: No Impact (less than the Project) because no PG&E Components-related activities would occur that could affect biological resources.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.5-3: LTSM. The Heartland Solar Project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. The implementation of Mitigation Measure 3.5-1, Mitigation Measure 3.5-2, and Mitigation Measure 3.5-3 would reduce the Project's potential significant impact to LTS. **Impact 3.5-4:** LTS. The PG&E Components could affect biological resources. **Impact 3.5-1c**: LTSM. The Heartland Solar Project would contribute to a significant cumulative impact, either directly or through habitat modifications, on one or more species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. However, with the implementation of Mitigation Measure 3.5-1, Mitigation Measure 3.5-2, and Mitigation Measure 3.5-3, the Project's incremental impact would not be cumulatively considerable, and the Heartland Solar Project's cumulative effect would be LTS. **Impact 3.5-2c:** LTS. The Heartland Solar Project could interfere with the movement of native resident or migratory wildlife species. **Impact 3.5-3c**: LTSM. The Heartland Solar Project could cause or conflict with a significant cumulative effect due to a conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. However, with the implementation of Mitigation Measure 3.5-1, Mitigation Measure 3.5-2, and Mitigation Measure 3.5-3, the Project's incremental impact would not be cumulatively considerable, and the Heartland Solar Project's cumulative effect would be LTS. **Impact 3.5-4c:** LTS. The PG&E Components could contribute to cumulative effects on biological resources.	• **Impact 3.5-1c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect on species. None of the mitigation measures recommended for the Project would be required. • **Impact 3.5-2c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to the movement of native resident or migratory wildlife species. • **Impact 3.5-3c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to local policies or ordinances protecting biological resources. None of the mitigation measures recommended for the Project would be required. • **Impact 3.5-4c**: No Impact (less than the Project) because there would be no PG&E Components-related impact that could contribute to cumulative effects on biological resources.	• **Impact 3.5-3**: LTSM (same as the Project) because Alternative 1 would have the same potential as the Project to conflict with local policies or ordinances protecting biological resources. Mitigation Measures 3.5-1, 3.5-2, and 3.5-3 would be required. • **Impact 3.5-4:** LTS (same as the Project) because Alternative 1 would involve the same activities associated with the PG&E Components and would therefore impact biological resources in the same manner. • **Impact 3.5-1c**: LTSM (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects. Mitigation Measures 3.5-1, 3.5-2, and 3.5-3 would be required. • **Impact 3.5-2c:** LTS (similar to but less than the Project) because Alternative 1 could interfere with the movement of native resident or migratory wildlife species, but the reduced Project size would incrementally lower the potential for this to occur. • **Impact 3.5-3c**: LTSM (same as the Project) because Alternative 1 would have the same potential as the Project to conflict with local policies or ordinances protecting biological resources. Mitigation Measure 3.5-1, Mitigation Measure 3.5-2, and Mitigation Measure 3.5-3, the Project's incremental impact would not be cumulatively considerable, and the Project's cumulative effect would be LTS. • **Impact 3.5-4c:** LTS (same as the Project) because Alternative 1 would involve the same activities associated with the PG&E Components and would therefore have the same potential to cause or contribute to a significant cumulative effect on biological resources.	• **Impact 3.5-1c-3c:** No Impact (less than the Project) because Alternative 2 would not contribute any incremental impact that could cause or contribute to a significant cumulative impact on biological resources. • **Impact 3.5-2c:** No Impact (less than the Project) because Alternative 2 would not contribute any incremental impact that could cause or contribute to a significant cumulative impact relating to interference with the movement of native resident or migratory wildlife species. • **Impact 3.5-3c:** LTS (less than the Project) because Alternative 2's development of geographically distributed solar PV systems on existing rooftops would have less potential than the Project to contribute to cumulative effects relating to conflict with local policies or ordinances protecting biological resources. • Impact 3.5-4c: No Impact (less than the Project) because there would be no PG&E Components-related impact that could contribute to cumulative effects on biological resources.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Cultural and Tribal Cultural Resources			
Impact 3.6-1: LTSM. Ground disturbing activities associated with the Heartland Solar Project could cause a substantial adverse change in the significance of a newly-discovered historical or archaeological resource, as defined in CEQA Guidelines section 15064.5. The implementation of Mitigation Measure 3.6-1 (which requires cultural resources awareness training) and Mitigation Measure 3.6-2 (which guides next steps in the event of an inadvertent discovery of cultural resources) would reduce the Project's potential significant impact to LTS. **Impact 3.6-2**: LTSM. Ground disturbing activities associated with the Heartland Solar Project could result in damage to previously unidentified human remains. However, the implementation of Mitigation Measure 3.6-3 (which requires cultural resources awareness training) and Mitigation Measure 3.6-2 (which guides next steps in the event of an inadvertent discovery of human remains) would reduce the Heartland Solar Project's potential significant impact to LTS. **Impact 3.6-3**: LTSM. Ground disturbing activities associated with the Heartland Solar Project could cause a substantial adverse change to previously unknown archaeological resources that are also tribal cultural resources, as defined in Public Resources Code section 21074(a). However, the implementation of Mitigation Measures 3.6-1, 3.6-2, and 3.6-3 as well as Mitigation Measure 3.6-4 (which requires the preparation and implementation of a cultural resource monitoring plan) would reduce the Heartland Solar Project's potential significant impact to LTS. **Impact 3.6-4:** LTS. Ground-disturbing activities associated with the PG&E Components could affect previously unknown, buried archaeological resources or human remains.	**Overall: less than the Project** • **Impact 3.6-1**: No Impact (less than the Project) because no Project-related activities would occur that could affect historical or archaeological resources. Neither of the mitigation measures recommended for the Project would be required. • **Impact 3.6-2**: No Impact (less than the Project) because no Project-related activities would occur that could result in damage to previously unidentified human remains. Neither of the mitigation measures recommended for the Project would be required. • **Impact 3.6-3**: No Impact (less than the Project) because no Project-related activities would occur that could affect archaeological resources that are also tribal cultural resources. None of the mitigation measures recommended for the Project would be required. • **Impact 3.6-4:** No Impact (less than the Project) because no PG&E Components-related activities would occur that could affect archaeological resources that are also tribal cultural resources. • **Impact 3.6-1c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to historical or archaeological resources. • **Impact 3.6-2c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to the disturbance of or damage to human remains. • **Impact 3.6-3c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to archaeological resources that are also tribal cultural resources.	**Overall: similar to but less than the Project** • **Impact 3.6-1**: LTSM (similar to but less than the Project) because Alternative 1 would avoid the potential discovery of historical or archaeological resources on 59 of the acres that would be disturbed by the Project. Nonetheless, because the potential for discoveries would remain in the areas where site disturbance would occur, Mitigation Measure 3.6-1 and Mitigation Measure 3.6-2 would be required. • **Impact 3.6-2**: LTSM (similar to but less than the Project) because Alternative 1 would avoid the potential discovery of human remains on 59 of the acres that would be disturbed by the Project. Nonetheless, because the potential for discoveries would remain in the areas where site disturbance would occur, Mitigation Measure 3.6-3 and Mitigation Measure 3.6-2 would be required. • **Impact 3.6-3**: LTSM (similar to but less than the Project) because Alternative 1 would avoid the potential discovery of archaeological resources that are also tribal cultural resources on 59 of the acres that would be disturbed by the Project. Nonetheless, because the potential for discoveries would remain in the areas where site disturbance would occur, Mitigation Measures 3.6-1, 3.6-2, 3.6-3, and 3.6-4 would be required. • **Impact 3.6-4:** LTS (same as the Project) because the construction, operation, and maintenance of the PG&E Components would not change under Alternative 1. • **Impact 3.6-1c**: LTS (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects. • **Impact 3.6-2c**: LTS (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects on human remains.	**Overall: less than the Project** • **Impact 3.6-1:** No Impact (less than the Project) because no ground-disturbance would occur that could result in a new discovery of historical or archaeological resources. • **Impact 3.6-2:** No Impact (less than the Project) because no ground-disturbance would occur that could result in the discovery of human remains. • **Impact 3.6-3:** No Impact (less than the Project) no ground-disturbance would cause or contribute to any significant impact related to historical or archaeological resources, or to archaeological resources that are also tribal cultural resources. • **Impact 3.6-4:** No Impact (less than the Project) because no PG&E Components-related activities would occur that could affect archaeological resources that are also tribal cultural resources. • **Impact 3.6-1c-3c:** No Impact (less than the Project) because Alternative 2 would not contribute any incremental impact that could cause or contribute to a significant cumulative impact on cultural and tribal cultural resources. • **Impact 3.6-4c**: No Impact (less than the Project) because there would be no PG&E Components-specific impact that could cause or contribute to any significant effect related to archaeological resources that are also tribal cultural resources.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.6-1c: LTSM. Heartland Solar Project-related ground disturbance would not cause or contribute to a significant cumulative effect due to substantial adverse change in the significance of a newly-discovered historical or archaeological resource, as defined in CEQA Guidelines section 15064.5, with implementation of Mitigation Measure 3.6-1. **Impact 3.6-2c**: LTSM. Heartland Solar Project-related ground disturbance would not cause or contribute to a significant cumulative effect due to the disturbance of or damage to human remains with implementation of Mitigation Measure 3.6-3. **Impact 3.6-3c**: LTSM. Ground disturbing activities associated with the Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a substantial adverse change to previously unknown archaeological resources that are also tribal cultural resources with implementation of Mitigation Measures 3.6-1, 3.6-2, 3.6-3, and 3.6-4. **Impact 3.6-4c**: LTS. Ground-disturbing activities associated with the PG&E Components could contribute to cumulative impacts on previously unknown, buried archaeological resources or human remains.	• **Impact 3.6-4c**: No Impact (less than the Project) because there would be no PG&E Components-specific impact that could cause or contribute to any significant effect related to archaeological resources that are also tribal cultural resources.	• **Impact 3.6-3c**: LTS (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects on previously unknown archaeological resources that are also tribal cultural resources. • **Impact 3.6-4c:** LTS (same as the Project) because the construction, operation, and maintenance of the PG&E Components, and therefore the potential to contribute to or cause cumulative impacts, would not change under Alternative 1.	
Energy			
Impact 3.7-1: LTS. Heartland Solar Project construction, operation and maintenance, and/or decommissioning and site reclamation would not result in the wasteful, inefficient, or unnecessary consumption or use of energy. **Impact 3.7-2:** LTS. Construction, operation, and maintenance of the PG&E Components could affect energy resources. **Impact 3.7-1c:** LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the wasteful, inefficient, or unnecessary consumption or use of energy.	**Overall: less than the Project** • **Impact 3.7-1**: No Impact (less than the Project) because no Project-related activities would occur that could affect the wasteful, inefficient, or unnecessary consumption or use of energy. • **Impact 3.7-2**: No Impact (less than the Project) because no PG&E Components-related construction, operation, or maintenance activities would occur that could affect energy resources.	**Overall: less than the Project** • **Impact 3.7-1:** LTS (less than the Project) because the number of workers commuting to the site would likely decrease with the smaller acreage, lowering the emissions generated by worker commute vehicles. • **Impact 3.7-2:** LTS (same as the Project) because the construction, operation, and maintenance of the PG&E Components would not change under Alternative 1. • **Impact 3.7-1c:** LTS (less than the Project) because Alternative 1's incrementally reduced energy demand would not cause or contribute to a significant adverse cumulative effect.	**Overall: less than the Project** • **Impact 3.7-1:** LTS (same as the Project) because Alternative 2 would result in the consumption and use of energy, but neither construction nor operation of the Project would result in the wasteful, inefficient, or unnecessary use of energy. • **Impact 3.7-2:** No Impact (less than the Project) because no development related to the PG&E Components would occur that could affect energy resources.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.7-2c: LTS. Construction, operation, and maintenance of the PG&E Components would not contribute to cumulative effects on energy resources.	• **Impact 3.7-1c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to the wasteful, inefficient, or unnecessary consumption or use of energy. • **Impact 3.8-7-2c:** No Impact (less than the Project) because there would be no impact specific to the PG&E Components that could cause or contribute to any significant effect related to energy resources.		• **Impact 3.7-1c:** LTS (similar to but less than the Project) because Alternative 2's similar, but slightly reduced, energy demand would not cause or contribute to a significant adverse cumulative effect. • **Impact 3.8-7-2c:** No Impact (less than the Project) because there would be no impact specific to the PG&E Components that could cause or contribute to any significant effect related to energy resources.
Geology and Soils			
Impact 3.8-1: LTS. The Heartland Solar Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking or ground failure, including liquefaction. **Impact 3.8-2**: LTS. The Heartland Solar Project would not result in soil erosion or loss of topsoil during construction and decommissioning. **Impact 3.8-3:** LTS. The Heartland Solar Project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Heartland Solar Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. **Impact 3.8-4:** LTS. The Heartland Solar Project would not be located on expansive soil, creating substantial direct or indirect risks to life or property. **Impact 3.8-5:** LTS. The Heartland Solar Project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater.	**Overall: less than the Project** • **Impact 3.8-1:** No Impact (less than the Project) because no Project-related ground-disturbance or development would occur that could result in a substantial adverse impact involving strong seismic ground shaking or ground failure, including liquefaction. • **Impact 3.8-2:** No Impact (less than the Project) because no Project–related ground-disturbance or development would occur that could result in a substantial soil erosion or loss of topsoil. • **Impact 3.8-3:** No Impact (less than the Project) because no Project-related ground-disturbance or development would occur that could result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. • **Impact 3.8-4:** No Impact (less than the Project) because no Project-related ground-disturbance or would be located on expansive soil. • **Impact 3.8-5:** No Impact (less than the Project) because no Project-related ground-disturbance or development would affect septic tanks or alternative wastewater disposal systems.	**Overall: same as the Project** • **Impact 3.8-1:** LTS (same as the Project) because development of Alternative 1 would occur on a subset of the same land that composes the Project site and would be subject to the same geological and seismic conditions. • **Impact 3.8-2:** LTS (same as the Project) because development of Alternative 1 would occur on a subset of the same land that composes the Project site and would be subject to the same geological and seismic conditions. • **Impact 3.8-3:** LTS (similar to but less than the Project) because only a subset of the same land that composes the Project site would be disturbed by Alternative 1. • **Impact 3.8-4:** LTS (same as the Project) because development of Alternative 1 would occur on a subset of the same land that composes the Project site, and thus would be subject to the same geology and soils conditions. • **Impact 3.8-5:** LTS (similar to but less than the Project) because Alternative 1 would be developed on a subset of the Project site and would include septic tanks or an alternative wastewater disposal system.	**Overall: less than the Project** • **Impact 3.8-1:** No Impact (less than the Project) because no ground-disturbance or development would occur that could result in a substantial adverse impact involving strong seismic ground shaking or ground failure, including liquefaction. • **Impact 3.8-2:** No Impact (less than the Project) because no ground-disturbance or development would occur that could result in a substantial soil erosion or loss of topsoil. • **Impact 3.8-3:** No Impact (less than the Project) because no ground-disturbance or development would occur that could result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. • **Impact 3.8-4:** No Impact (less than the Project) because no ground-disturbance or would be located on expansive soil. • **Impact 3.8-5:** No Impact (less than the Project) because no ground-disturbance or development would affect septic tanks or alternative wastewater disposal systems. • **Impact 3.8-6:** No Impact (less than the Project) because no ground-disturbance or development would occur that could destroy a unique paleontological resource or site.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.8-6: LTSM. The Heartland Solar Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. However, implementation of Mitigation Measure 3.8-6 (which requires the development and implementation of a worker environmental awareness program and would act to educate all workers of the potential to encounter fossils during construction activities and proper procedures to follow in the event of a discovery) would ensure potential impacts on unique paleontological resources would be less than significant. **Impact 3.8-7**: LTS. The PG&E Components could affect (but would not have a significant adverse impact on) geology, soils, or paleontological resources. **Impact 3.8-1c:** LTS. The Heartland Solar Project would not cause or contribute to any significant cumulative effect due to the risk of loss, injury, or death involving strong seismic ground shaking and seismic-induced ground failure, including liquefaction. **Impact 3.8-2c:** LTS. The Heartland Solar Project would not cause or contribute to any significant cumulative effect resulting in substantial soil erosion or loss of topsoil. **Impact 3.8-3c:** LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to its location on a geologic unit or soil that is unstable, or that would become unstable as a result of the Heartland Solar Project. **Impact 3.8-4c:** LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to being located on expansive soil. **Impact 3.8-5c:** LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to onsite soils being incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater.	• **Impact 3.8-6:** No Impact (less than the Project) because Project-related ground-disturbance or development would occur that could destroy a unique paleontological resource or site. • **Impact 3.8-7:** No Impact (less than the Project) because construction of the PG&E Components would not occur and therefore would not have any impact on geology, soils, or paleontological resources. • **Impact 3.8-1c:** No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to strong seismic ground shaking or ground failure, including liquefaction. • **Impact 3.8-2c:** No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to substantial erosion or loss of topsoil. • **Impact 3.8-3c:** No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to its location on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. • **Impact 3.8-4c:** No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to being located on expansive soil. • **Impact 3.8-5c:** No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to septic tanks or alternative wastewater disposal systems.	• **Impact 3.8-6:** LTSM (same as the Project) because development of Alternative 1 would occur on a subset of the Project site and would have similar impacts as the Project on unique paleontological resources or sites or unique geologic features. Implementation of Mitigation Measure 3.8-6 (which requires the development and implementation of a worker environmental awareness program and would act to educate all workers of the potential to encounter fossils during construction activities and proper procedures to follow in the event of a discovery) would ensure potential impacts on unique paleontological resources would be less than significant. • **Impact 3.8-7:** LTS (same as the Project) because development of Alternative 1 would include the same PG&E Components and therefore would have similar impacts on geology, soils, or paleontological resources. • **Impact 3.8-1c:** LTS (same as the Project) because Alternative 1 would not cause or contribute to any significant cumulative effect due to the risk of loss, injury, or death involving strong seismic ground shaking and seismic-induced ground failure, including liquefaction. • **Impact 3.8-2c:** LTS (same as the Project) because Alternative 1 would not cause or contribute to any significant cumulative effect resulting in substantial soil erosion or loss of topsoil. • **Impact 3.8-3c:** LTS (same as the Project) because Alternative 1 would not cause or contribute to any significant cumulative effect due to its location on a geologic unit or soil that is unstable, or that would become unstable as a result of the development of Alternative 1. • **Impact 3.8-4c:** LTS (same as the Project) because Alternative 1 would not cause or contribute to a significant cumulative effect due to being located on expansive soil.	• **Impact 3.8-7:** No Impact (less than the Project) because no PG&E Components-related ground-disturbance or development would occur that could cause an impact on geology, soils, or paleontological resources. • **Impact 3.8-1c:** No Impact (less than the Project) because Alternative 2 would not contribute any incremental impact that could cause or contribute to a significant cumulative impact to geology and soils. • **Impact 3.8-2c:** No Impact (less than the Project) because Alternative 2 would cause no ground-disturbance or development that would result in cumulative soil erosion or loss of topsoil. • **Impact 3.8-3c:** No Impact (less than the Project) because no ground-disturbance or development would occur that could cause or contribute to on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. • **Impact 3.8-4c:** No Impact (less than the Project) because no ground-disturbance or would occur that would be located on expansive soil. • **Impact 3.8-5c:** No Impact (less than the Project) because Alternative 2 would not cause ground-disturbance or development that could affect septic tanks or alternative wastewater disposal systems. • **Impact 3.8-6c:** No Impact (less than the Project) because Alternative 2 would not cause ground-disturbance or development that could destroy a unique paleontological resource or site. • **Impact 3.8-7c:** No Impact (less than the Project) because no PG&E Components-related ground-disturbance or development would occur that could cumulatively impact geology, soils, or paleontological resources.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.8-6c: LTSM. The Heartland Solar Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. However, implementation of Mitigation Measure 3.8-6 (which requires the development and implementation of a worker environmental awareness program and would act to educate all workers of the potential to encounter fossils during construction activities and proper procedures to follow in the event of a discovery) would ensure that the Heartland Solar Project's cumulative effect would be less than significant. **Impact 3.8-7c**: LTS. The incremental impacts of the PG&E Components could combine with the impacts of other projects to cause cumulative effects on geology, soils, or paleontological resources; however, any such cumulative effects of the PG&E Component would be less than significant.	• **Impact 3.8-6c:** No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to destroying a unique paleontological resource or site or unique geologic feature. • **Impact 3.8-7c:** No Impact (less than the Project) because there would be no impact specific to the PG&E Components that could cause or contribute to any significant effect related to geology, soils, or paleontological resources.	• **Impact 3.8-5c:** LTS (same as the Project) because Alternative 1 would not cause or contribute to a significant cumulative effect due to onsite soils being incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater. • **Impact 3.8-6c:** LTSM (same as the Project) because Alternative 1 could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. However, similar to the Project, implementation of Mitigation Measure 3.8-6 (which requires the development and implementation of a worker environmental awareness program and would act to educate all workers of the potential to encounter fossils during construction activities and proper procedures to follow in the event of a discovery) would ensure that Alternative 1's cumulative effect would be less than significant. • **Impact 3.8-7c:** LTS (same as the Project) because development of Alternative 1 would include the same PG&E Components and, therefore, also could affect geology, soils, or paleontological resources. For the same reason as for the Project, Alternative 1's cumulative effect would be less than significant.	
Greenhouse Gas Emissions			
Impact 3.9-1: LTS. The Heartland Solar Project would generate direct and indirect GHG emissions. **Impact 3.9-2:** LTS. The Heartland Solar Project could conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. **Impact 3.9-3:** LTS. The PG&E Components would not cause significant GHG emissions.	**Overall: less than the Project** • **Impact 3.9-1:** No Impact (less than the Project) because no GHGs would be emitted over baseline conditions in this scenario. However, the No Project Alternative would not contribute to a reduction of GHG emissions by offsetting current GHG-producing fossil-fueled energy, and thus, GHG emissions under baseline conditions may be higher under the No Project Alternative than with implementation of the Project.	**Overall: greater than the Project** • **Impact 3.9-1:** LTS (similar to but less than the Project). Alternative 1 would entail a reduction in Project size that would, therefore, require fewer equipment-use hours and vehicle trips overall, resulting in reduced GHG emissions relative to the Project.	**Overall: same as the Project** • **Impact 3.9-1:** LTS (less than the Project) because rooftop construction methods would require less heavy construction equipment and fewer vehicles than the proposed ground-mount system.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
	• **Impact 3.9-2:** No Impact (less than the Project). Because no GHGs would be emitted over baseline conditions in the No Project scenario, the No Project Alternative could not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. • **Impact 3.9-3:** No Impact (less than the Project) because no GHGs would be emitted over baseline conditions in the No Project scenario.	• **Impact 3.9-2:** LTS (greater than the Project). Alternative 1 would not cause a significant impact related to a conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions; however, the 59-acre reduction in the size of the solar array area would result in a corresponding reduction in power output and energy storage capacity. Alternative 1's reduced storage capacity would contribute less of a benefit in terms of progress toward meeting GHG emissions reduction goals set forth in applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. • **Impact 3.9-3:** LTS (same as the Project) because development of Alternative 1 would include the same PG&E Components as the Project.	• **Impact 3.9-2:** LTS (greater than the Project). Because the distributed systems on rooftops would lack tracking systems and be less efficient, and generate less energy per panel, than those that would be installed as part of the Project. Further, this alternative would not have energy storage to maintain energy generating capacity when sunlight is not available. As such, this alternative's overall GHG emission offset potential would be smaller than the Project. • **Impact 3.9-3:** No Impact (less than the Project) because the PG&E Components would not be constructed, operated, or maintained.
Hazards and Hazardous Materials			
Impact 3.10-1: LTSM. The Heartland Solar Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites. However, the implementation of Mitigation Measure 3.10-1 (which requires a site management plan) would reduce the Heartland Solar Project's potential significant impact to LTS. **Impact 3.10-2**: LTS. The Heartland Solar Project would not otherwise create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	**Overall: less than the Project** • **Impact 3.10-1**: No Impact (less than the Project) because no Project-related transport, use, or disposal of hazardous materials would occur. • **Impact 3.10-2**: No Impact (less than the Project) because no Project-related removal of illegal dump sites would occur. • **Impact 3.10-3**: No Impact (less than the Project) because no Project-related impairment of or interference with adopted plans would occur. • **Impact 3.10-4:** No Impact (less than the Project) because construction of the PG&E Components would not occur and therefore would not have any impact on hazards and hazardous materials. • **Impact 3.10-1c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to the removal of illegal dump sites.	**Overall: less than the Project** • **Impact 3.10-1**: LTSM (less than the Project) because Alternative 1 would avoid (i.e., cause no potential impact in connection with) dump site #1 or dump site #2 (which is located at the northeast corner of W. Lincoln Avenue and S. Ohio Avenue). However, because a potential significant impact would remain with respect to dump site #3, Mitigation Measure 3.10-1 would be required. (See Figure 3 in Appendix H, *Phase I Site Assessment*). • **Impact 3.10-2**: LTS (similar to but less than the Project) because Alternative 1 would require reduced amounts of hazardous materials to be transported, used, or disposed of to build and operate a smaller facility, and would reduce the geographic area by 59 acres where potential upsets or accidents could occur involving releases into the environment.	**Overall: less than the Project** • **Impact 3.10-1:** LTS (less than the Project) because, although the routine transport, use, or disposal of hazardous materials would occur, it would not create a significant hazard to the public or the environment. • **Impact 3.10-2**: No Impact (less than the Project) because no Project-related removal of illegal dump sites would occur. • **Impact 3.10-3:** No Impact (less than the Project) because rooftop construction would not require the types of construction that would involve road closure that could impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. • **Impact 3.10-4:** No Impact (less than the Project) because no PG&E Components-related activities would occur that could affect hazards or hazardous materials.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.10-3: LTS. The Heartland Solar Project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. **Impact 3.10-4:** LTS. The PG&E Components could affect hazards and hazards materials considerations. **Impact 3.10-1c**: LTS. The Heartland Solar Project would not contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites. **Impact 3.10-2c**: LTS. The Heartland Solar Project could contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. **Impact 3.10-3c**: LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan. **Impact 3.10-4c:** LTS. The PG&E Components would not make a cumulatively considerable contribution to any cumulative effect on hazards and hazards materials considerations.	• **Impact 3.10-2c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to transport, use, or disposal of hazardous materials. • **Impact 3.10-3c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to the implementation of an adopted emergency response plan or emergency evacuation plan. • **Impact 3.10-4c:** No Impact (less than the Project) because there would be no impact specific to the PG&E Components that could cause or contribute to any significant effect related to paleontological resources.	• **Impact 3.10-3**: LTS (same as the Project) because Alternative 1 would not affect the aspects of the Project that could impair implementation of or cause physical interfere with an adopted emergency response plan or emergency evacuation plan. • **Impact 3.10-4:** LTS (same as the Project) because development of Alternative 1 would include the same PG&E Components as the Project. • **Impact 3.10-1c**: LTS (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects relating to the routine transport, use, or disposal of hazardous materials and to the potential for reasonably foreseeable upset or accidents to occur. • **Impact 3.10-2c**: LTS (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects relating to the routine transport, use, or disposal of hazardous materials and to the potential for reasonably foreseeable upsets or accidents to occur. • **Impact 3.10-3c**: LTS (same as the Project) because Alternative 1 would result in substantially the same incremental contribution to potential cumulative effects on emergency response and emergency evacuation plans. • **Impact 3.10-4c**: LTS (same as the Project) because the PG&E Components, under Alternative 1, would result in the same incremental contribution to potential cumulative effects on hazards and hazardous materials.	• **Impact 3.10-1c:** LTS (same as the Project) because Alternative 2 would not contribute to a significant cumulative hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment pursuant to removal of illegal dump sites. • **Impact 3.10-2c:** No Impact (less than the Project) because Alternative 2 would not contribute to any cumulatively considerable impact on Project-related reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. • **Impact 3.10-3c**: LTS (same as the Project) because Alternative 2 would not cause or contribute to a significant cumulative impact due to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan. • **Impact 3.10-4c:** No Impact (less than the Project) because no PG&E Components-related activities would occur that could be cumulatively considerable to hazards or hazardous materials.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Hydrology and Water Quality			
Impact 3.11-1: LTSM. The Heartland Solar Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. With implementation of Mitigation Measure 3.11-1 (which includes a SWPPP), potential water quality impacts would be reduced to less-than-significant levels. **Impact 3.11-2:** LTS. The Heartland Solar Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin. **Impact 3.11-3:** LTSM. The Heartland Solar Project would not 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: i) Results in substantial erosion or siltation on- or off-site; ii) substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) creates or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff; or iv) impedes or redirects flood flows. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. **Impact 3.11-4:** LTSM. The Heartland Solar Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. **Impact 3.11-5:** LTS. The PG&E Components could affect hydrology and water quality considerations.	**Overall: less than the Project** • **Impact 3.11-1:** No Impact (less than the Project) because no Project-related development would occur that could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. • **Impact 3.11-2:** No Impact (less than the Project) because no Project-related development would occur that could substantially decrease groundwater supplies or interfere substantially with groundwater recharge. • **Impact 3.11-3** No Impact (less than the Project) because no Project-related development would occur that could 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: i) Results in substantial erosion or siltation on- or off-site; ii) substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) creates or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff; or iv) impedes or redirects flood flows. • **Impact 3.11-4:** No Impact (less than the Project) because no Project-related development would occur that could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. • **Impact 3.11-5:** No Impact (less than the Project) because no PG&E Components-related development would occur that could impact hydrology or water quality.	**Overall: less than the Project** • **Impact 3.11-1:** LTSM (less than the Project) because Alternative 1 would have a smaller overall footprint and fewer impacts related to violation of water quality standards or waste discharge requirements, or other degradation of surface or groundwater quality would result. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. • **Impact 3.11-2:** LTSM (less than the Project). Alternative 1 would require less ground disturbance and lower water demands than the proposed Project and would therefore have less significant impacts on groundwater recharge. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. • **Impact 3.11-3:** LTSM (same as the Project) because Alternative 1 would not substantially alter the existing drainage pattern of the site or area in a way that would result in substantial erosion or siltation on- or off-site, result in a substantial increase in the rate or amount of surface runoff, create or contribute to runoff water that would exceed the stormwater drainage system capacity or provide substantial additional sources of polluted runoff, or impede or redirect flood flows. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. • **Impact 3.11-4**: LTSM (less than the Project) because Alternative 1's reduced footprint and ground disturbance would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Mitigation Measure 3.11-1 (which includes a SWPP) would be required.	**Overall: less than the Project** • **Impact 3.11-1:** No Impact (less than the Project) because no Project-related development would occur that could violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. • **Impact 3.11-2:** No Impact (less than the Project) because there would be no change to the existing (baseline) level of demand on groundwater supplies. • **Impact 3.11-3:** No Impact (less than the Project) because no alteration of the existing drainage pattern of the site or area would occur 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 provides substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows. • **Impact 3.11-4:** No Impact (less than the Project) because no change to on-site conditions would occur that could conflict with or obstruct implementation of the water quality control plan or sustainable groundwater management plan. • **Impact 3.11-5:** No Impact (less than the Project) because no PG&E Components-related development would occur that could impact hydrology or water quality. • **Impact 3.11-1c-4c:** No Impact (less than the Project) because no change to on-site conditions would occur that could cause or contribute to any significant effect related to hydrology or water quality.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.11-1c: LTSM. The Heartland Solar Project would not result in a cumulatively considerable contribution to any significant cumulative effect due to violation of any water quality standards or waste discharge requirements or other substantial degradation of surface or groundwater quality. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. **Impact 3.11-2c:** LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a substantial decrease in groundwater supplies or substantial interference with groundwater recharge that could impede sustainable groundwater management of the basin. **Impact 3.11-3c:** LTSM. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to location in a flood hazard or due to the risk of release of pollutants due to Project inundation with implementation of Mitigation Measure 3.11-1. **Impact 3.11-4c:** LTSM. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to a conflict with or obstruction of the implementation of the basin plan or GSP. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. **Impact 3.11-5c:** LTS. The PG&E Components would not cause a cumulatively considerable contribution to cumulative effects on hydrology or water quality.	• **Impact 3.11-1c-5c:** No Impact (less than the Project) because there would be no impact specific to the No Project Alternative that could cause or contribute to any significant effect related to hydrology or water quality. • **Impact 3.11-5c:** No Impact (less than the Project) because there would be no impact specific to the PG&E Components that could cause or contribute to any significant cumulative effect related to hydrology or water quality.	• **Impact 3.11-5:** LTS (same as the Project) because development of Alternative 1 would include the same PG&E Components as the Project and would therefore affect hydrology and water quality in the same manner as the Project. • **Impact 3.11-1c**: LTSM (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects relating to any water quality standards or waste discharge requirements or other substantial degradation of surface or groundwater quality. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. • **Impact 3.11-2c**: LTS (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects due to a substantial decrease in groundwater supplies or substantial interference with groundwater recharge that could impede sustainable groundwater management of the basin. • **Impact 3.11-3c**: LTS (same as the Project) because Alternative 1 would have the same potential as the Project to cause or contribute to a significant cumulative effect due to location in a flood hazard or due to the risk of release of pollutants due to Project inundation. • **Impact 3.11-4c**: LTSM (less than the Project) because Alternative 1 would reduce the incremental contribution to potential cumulative effects due to a conflict with or obstruction of the implementation of the basin plan or GSP. Mitigation Measure 3.11-1 (which includes a SWPP) would be required. • **Impact 3.11-5c:** LTS (same as the Project) because development of Alternative 1 would include the same PG&E Components as the Project and would therefore have the same potential to cause or contribute to a significant cumulative impact on hydrology or water quality.	• **Impact 3.11-5c:** No Impact (less than the Project) because there would be no impact specific to the PG&E Components that could cause or contribute to any significant cumulative effect related to hydrology or water quality.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Land Use and Planning			
No Impact.	**Overall: same as the Project** • No impact (same as the Project) because no Project-related development would be constructed, operated, maintained, or decommissioned on the Project site and there would be no change relative to baseline conditions and therefore no impact on established communities. • No impact (same as the Project) because no Project-related development would occur that could conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	**Overall: same as the Project** • No impact (same as the Project) because Project-related development under Alternative 1 would not physically divide an established community. • No impact (same as the Project) because Project-related development under Alternative 1 would not conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	**Overall: same as the Project** • No impact (same as the Project) because if Alternative 2 were implemented, solar energy generation-related infrastructure would be developed on existing rooftops; no division of an established community would occur. • No impact (same as the Project) because individual rooftop solar projects would be subject to compliance with applicable land use plans, policies, and regulations, adopted for the purpose of mitigating an environmental effect. No conflicts would result.
Mineral Resources			
No Impact.	**Overall: same as the Project** • No Impact (same as the Project) because there would be no Project-related development or ground disturbance would occur that could affect the availability of a known mineral resource. • No Impact (same as the Project) because no Project-related development or ground disturbance would occur that could affect the availability of a known mineral resource recovery site.	**Overall: same as the Project** • No Impact (same as the Project) because there are no known mineral resources within the Alternative 1 site that would be of value to the region and the residents of the state. • No Impact (same as the Project) because there are no known locally important mineral resource recovery sites within the Alternative 1 site.	**Overall: same as the Project** • No impact (same as the Project) because no development or ground disturbance would occur that could affect the availability of a known mineral resource. • No impact (same as the Project) because no development or ground disturbance would occur that could affect the availability of a known mineral resource recovery site.
Noise and Acoustics			
Impact 3.14-1: LTSM. Construction and decommissioning of the Heartland Solar Project during nighttime hours could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance. However, the implementation of Mitigation Measure 3.14-1 (which requires implementation of a County-approved Construction Noise Reduction Plan) would reduce the Heartland Solar Project's potential significant impact to LTS.	**Overall: less than the Project** • **Impact 3.14-1**: No Impact (less than the Project) because no Project construction or decommissioning would occur that could affect nighttime noise levels. • **Impact 3.14-2**: No Impact (less than the Project) because no Project-caused change in ambient noise levels in the vicinity of the Project site would occur. • **Impact 3.14-3**: No Impact (less than the Project) because no Project-caused vibration or groundborne noise would be generated.	**Overall: same as the Project** • **Impact 3.14-1**: LTSM (same as the Project) because the area where all activities would be avoided by Alternative 1 are 1 mile or more away from receptors R1 and R2, and any noise that the Project would have generated there would have attenuated before it could have affected those locations. Mitigation Measure 3.14-1 would be required.	**Overall: less than the Project** • **Impact 3.14-1:** No Impact (less than the Project) because no nighttime construction would occur that could increase ambient noise levels in excess of standards established in the local general plan or noise ordinance.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.14-2: LTS. Operation and maintenance of the Heartland Solar Project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site. **Impact 3.14-3:** LTS. The Heartland Solar Project could expose people and/or structures to vibration levels and groundborne noise levels. **Impact 3.14-4:** LTS. Construction of the PG&E Components during nighttime hours could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance. **Impact 3.14-1c:** LTSM. The Heartland Solar Project would contribute to a significant cumulative effect due to the generation of a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance during construction and decommissioning activities. However, the implementation of Mitigation Measure 3.14-1 would reduce the Heartland Solar Project's potential significant impact to LTS. **Impact 3.14-2c:** LTS. The Heartland Solar Project would not contribute to a substantial cumulative temporary or permanent increase in ambient noise levels during operation and maintenance activities. **Impact 3.14-3c**: LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to exposure of people or structures to vibration levels and groundborne noise levels. **Impact 3.14-4c**: LTS. Construction of the PG&E Components during nighttime hours could generate noise that could combine with noise generated by other projects; however, the cumulative nighttime noise impact would not be significant. The project's cumulative effect would be LTS.	• **Impact 3.14-4**: No Impact. (less than the Project) because no construction of the PG&E Components would occur during nighttime hours. There would be no substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance. • **Impact 3.14-1c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to ambient noise. • **Impact 3.14-2c**: No Impact (less than the Project) because there would be no Project construction or decommissioning that could cause or contribute to any significant effect related to ambient noise. • **Impact 3.14-3c**: No Impact (less than the Project) because no Project-specific impact that could cause or contribute to any significant effect related to vibration or groundborne noise. • **Impact 3.14-4c:** No Impact (less than the Project) because no Project related construction would occur.	• **Impact 3.14-2**: LTS (same as the Project) because the area where all activities would be avoided by Alternative 1 are 1 mile or more away from receptors R1 and R2, and any noise that the Project would have generated there would have attenuated before it could have affected those locations. • **Impact 3.14-3**: LTS (same as the Project) because Alternative 1's generation of vibration and groundborne noise also would attenuate before affecting structures or people. • **Impact 3.14-4:** LTS (same as the Project) because Alternative 1 would require the same construction of PG&E Components that could occur during nighttime hours and thereby generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance. • **Impact 3.14-1c**: LTSM (same as the Project) because Alternative 1 would result in the same contribution as the Project to potential cumulative effects. Mitigation Measure 3.14-1 would be required. • **Impact 3.14-2c**: LTS (same as the Project) because Alternative 1 would result in the same contribution as the Project to potential cumulative effects. • **Impact 3.14-3c**: LTS (same as the Project) because Alternative 1 would result in the same contribution as the Project to potential cumulative effects. • **Impact 3.14-4c**: LTS (same as the Project) because Alternative 1 would result in the same contribution as the Project to potential cumulative effects.	• **Impact 3.**14-2: LTS (less than the Project). Although operation and maintenance could be needed that generates a temporary or permanent increase in ambient noise levels in the vicinity of the Alternative 2 implementation sites, such exceedances would not be substantial. • **Impact 3.14-3:** LTS (same as the Project) because any equipment operation that could expose people or structures to vibration would be regulated and limited in duration. • **Impact 3.14-4**: No Impact. (less than the Project) because no construction of the PG&E Components would occur during nighttime hours. There would be no substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance. • **Impacts 3.14-1c–4c:** No Impact (less than the Project) because Alternative 2 would be developed on individual structures, and so would not combine with the incremental impacts of other projects to cause or contribute to cumulative noise or vibration conditions.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Population and Housing			
No Impact.	**Overall: same as the Project** • No impact (same as the Project) because no Project-related facilities would be constructed, operated, maintained, or decommissioned on the Project site. No construction workers would be required at the site. Because there would be no change relative to baseline conditions, the No Project Alternative would not induce substantial unplanned population growth in the study area. • No impact (same as the Project) because the No Project Alternative would not displace substantial numbers of existing people or housing.	**Overall: same as the Project** • No impact (same as the Project) because, for the same reasons as described for the Project in Section 3.15, *Population and Housing*, Alternative 1 would not induce substantial unplanned population growth in the study area. • No impact (same as the Project) because, for the same reasons as described for the Project in Section 3.15, *Population and Housing*, Alternative 1 would not displace substantial numbers of existing people or housing.	**Overall: same as the Project** • No impact (same as the Project) because Alternative 2's proposed development on existing rooftops would not induce substantial unplanned population growth in the study area. • No impact (same as the Project) because Alternative 2 would not displace substantial numbers of existing people or housing.
Public Services			
No Impact.	**Overall: same as the Project** No impact (same as the Project). If the No Project Alternative were implemented, no increase in the baseline level of demand for public services would be generated by on-site activities.	**Overall: same as the Project** No impact (same as the Project). If Alternative 1 were implemented, no increase in the baseline level of demand for public services would be generated by on-site activities.	**Overall: same as the Project** No impact (same as the Project because if Alternative 2 were implemented, no increase in the baseline level of demand for public services would be generated by on-site activities.
Recreation			
No impact.	**Overall: same as the Project** • No impact (same as the Project) because the No Project Alternative would not increase the use of existing neighborhood and regional parks or other recreational facilities. • No impact (same as the Project) because the No Project Alternative would not result in new recreational facilities to be constructed, operated or maintained, and would not otherwise require the construction or expansion of recreational facilities.	**Overall: same as the Project** • No impact (same as the Project) because Alternative 1 would not cause a substantial increase in population or a substantial reduction in the availability of existing parks or other recreational facilities, and thus would not increase the use of existing neighborhood and regional parks or other recreational facilities. • No impact (same as the Project) because Alternative 1 would not result in population growth and would not affect the County's ability to meet the existing demand for parks and recreation-related facilities, and thus would not result in construction of new or expanded recreational facilities.	**Overall: same as the Project** • No impact (same as the Project) because Alternative 2 would not increase the use of existing neighborhood and regional parks or other recreational facilities. • No impact (same as the Project) because Alternative 2 would not result in new recreational facilities to be constructed, operated or maintained, and would not otherwise require the construction or expansion of recreational facilities.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Transportation			
Impact 3.18-1: LTSM. The Heartland Solar Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway facilities. However, the implementation of Mitigation Measure 3.18-1 would reduce the Heartland Solar Project's potential significant impact to LTS. **Impact 3.18-2**: LTS. The Heartland Solar Project would not conflict or be inconsistent with CEQA Guidelines section 15064.3(b). **Impact 3.18-3**: LTS. The Heartland Solar Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). **Impact 3.18-4**: LTSM. The Heartland Solar Project could result in inadequate emergency access. However, the implementation of Mitigation Measure 3.18-1 would reduce the Heartland Solar Project's potential significant impact to LTS. **Impact 3.18-5:** LTS. Construction, operation and maintenance of the PG&E Components could affect transportation. **Impact 3.18-1c**: LTSM. The Heartland Solar Project could cause a cumulatively considerable contribution to a significant cumulative effect due to a conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway facilities. However, the implementation of Mitigation Measure 3.18-1 would reduce the Heartland Solar Project's contribution to a less than cumulatively considerable level. The Heartland Solar Project's cumulative effect would be LTS. **Impact 3.18-2c**: LTS. The Heartland Solar Project would not cause or contribute to significant cumulative effect due to a conflict or inconsistency with CEQA Guidelines section 15064.3(b).	**Overall: less than the Project** • **Impact 3.18-1**: No Impact (less than the Project) because no Project-related activities would occur that could conflict with a program, plan, ordinance, or policy. • **Impact 3.18-2**: No Impact (less than the Project) because no Project-related activities would occur that could conflict or be inconsistent with CEQA Guidelines section 15064.3(b). • **Impact 3.18-3**: No Impact (less than the Project) because no Project-related activities would occur that could substantially increase hazards due to a geometric design feature or incompatible uses. • **Impact 3.18-4**: No Impact (less than the Project) because no Project-related activities would occur that could result in inadequate emergency access. • **Impact 3.18-5:** No Impact (less than the Project) because no PG&E Components-related activities would occur that could affect transportation. • **Impact 3.18-1c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to a program, plan, ordinance, or policy addressing the circulation system. • **Impact 3.18-2c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to CEQA Guidelines section 15064.3(b). • **Impact 3.18-3c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to a geometric design feature or incompatible uses.	**Overall: similar but less than the Project** • **Impact 3.18-1**: LTSM (similar but less than the Project). Alternative 1 would involve a reduction in Project size and, therefore, construction vehicle trips would be scaled in proportion to the reduced project size. Impacts on roadways would be reduced but comparable. Mitigation Measure 3.18-1 would be required. • **Impact 3.18-2**: LTS (same as the Project) because Alternative 1 would involve the same activities as the Project and therefore would have the same potential to conflict with CEQA Guidelines section 15064.3(b). • **Impact 3.18-3**: LTS (same as the Project) because Alternative 1 would not cause a significant impact related to a substantial increase in hazards due to a geometric design feature or incompatible uses. • **Impact 3.18-4:** LTSM (same as the Project) because Alternative 1 could affect circulation in the same manner as the Project but would not result in inadequate emergency access. Mitigation Measure 3.18-1 would be required. • **Impact 3.18-5:** LTS (same as the Project) because Alternative 1 would involve the same activities related to the PG&E Components and therefore would affect transportation in the same manner. • **Impact 3.18-1c**: LTSM (similar but less than the Project). Similar to the Project, Alternative 1 could cause a cumulatively considerable contribution to a significant cumulative effect, albeit at a reduced level than the Project, due to a conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway facilities. However, the implementation of Mitigation Measure 3.18-1 would reduce Alternative 1's contribution to a less than cumulatively considerable level.	**Overall: similar but less than the Project** • **Impact 3.18-1:** LTS (less than the Project) because some traffic would be generated that would be distributed throughout the County. Mitigation Measure 3.18-1 would not be required. • **Impact 3.18-2:** No Impact (less than the Project) because no activities would be needed that could conflict or be inconsistent with CEQA Guidelines section 15064.3(b). • **Impact 3.18-3:** No Impact (less than the Project) because no activities would be required that could increase hazards due to a geometric design feature or incompatible uses. • **Impact 3.18-4:** No Impact (less than the Project) because Alternative 2 would not cause conditions that could result in inadequate emergency access. • **Impact 3.18-5:** No Impact (less than the Project) because no PG&E Components-related activities would occur that could affect transportation. • **Impact 3.18-1c:** LTS (less than the Project). Alternative 2 would be developed on various sites distributed throughout the County and would not cause a cumulatively considerable contribution to a significant cumulative effect. Mitigation Measure 3.18-1 would not be required. • **Impact 3.18-2c**: No Impact (less than the Project) because Alternative 2 would not cause or contribute to any cumulative effect related to CEQA Guidelines Section 15064.3(b). • **Impact 3.18-3c**: No Impact (less than the Project) because Alternative 2 would not could cause or contribute to any significant effect related to a geometric design feature or incompatible uses.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.18-3c: LTS. The Heartland Solar Project would cause or contribute to a significant cumulative effect due to a substantial increase in hazards due to a geometric design feature or incompatible uses. **Impact 3.18-4c**: LTSM. The Heartland Solar Project could cause or contribute to a significant cumulative effect due to inadequate emergency access. However, the implementation of Mitigation Measure 3.18-1 would reduce the Heartland Solar Project's contribution to a less than cumulatively considerable level. The Heartland Solar Project's cumulative effect would be LTS. **Impact 3.18-5c**: LTS. Construction, operation and maintenance of the PG&E Components would not cause a cumulatively considerable contribution to a cumulative impact on transportation.	• **Impact 3.18-4c**: No Impact (less than the Project) because there would be no Project-specific impact that could cause or contribute to any significant effect related to emergency access. • **Impact 3.18-5c**: No Impact (less than the Project) because there would be no PG&E Components-specific impact that could cause or contribute to any cumulatively considerable effect.	• **Impact 3.18-2c**: LTS (same as the Project). Alternative 1, similar to the Project, would not cause or contribute to significant cumulative effect due to a conflict or inconsistency with CEQA Guidelines section 15064.3(b). • **Impact 3.18-3c**: LTS (same as the Project) because Alternative 1 would have the same potential to contribute to a significant cumulative effect due to a substantial increase in hazards due to a geometric design feature or incompatible uses. • **Impact 3.18-4c**: LTSM (same as the Project) Similar to the Project, Alternative 1 could cause or contribute to a significant cumulative effect due to inadequate emergency access. However, the implementation of Mitigation Measure 3.18-1 would reduce Alternative 1's contribution to a less than cumulatively considerable level. • **Impact 3.18-5c**: LTS (same as the Project) because Alternative 1 would involve the same activities related to the PG&E Components and therefore has the same potential to cause a cumulatively considerable contribution to a cumulative impact on transportation.	• **Impact 3.18-4c**: No Impact (less than the Project) because Alternative 2 would not cause or contribute to any significant effect related to emergency access. • **Impact 3.18-5c**: No Impact (less than the Project) because there would be no PG&E Components-specific impact that could cause or contribute to any cumulatively considerable effect.
Utilities and Service Systems			
Impact 3.19-1: LTS. The Heartland Solar Project would not result in the construction of new or expanded water, wastewater treatment, electric power, or telecommunications facilities that would cause significant environmental effects. **Impact 3.19-2:** LTSM. The Heartland Solar Project could result in the construction of new or expanded stormwater drainage that would cause significant environmental effects. Mitigation Measure 3.11-1 would require a SWPPP to be incorporated into construction documents that includes site-specific BMPs to reduce runoff and control erosion.	**Overall: less than the Project** • **Impact 3.19-1:** No Impact (less than the Project) because no Project-related water, wastewater treatment, stormwater drainage, electric power, or telecommunications utilities or services would be needed that could require construction that would cause significant environmental effects. • **Impact 3.19-2:** No Impact (less than the Project) because no Project-related stormwater infrastructure could affect surface drainage.	**Overall: similar but less than the Project** • **Impact 3.19-1:** LTS (similar but less than the Project) because Alternative 1's limitation of Project-related development would incrementally reduce the resulting overall demand for utility and service system services that would cause significant environmental effects. • **Impact 3.19-2:** LTSM (same as the Project). Surface drainage infrastructure would be required that could affect stormwater drainage in a manner substantially similar to the Project. Mitigation Measure 3.11-1 would be needed to reduce runoff and control erosion so that the resulting impact would be less than significant.	**Overall: less than the Project** • **Impact 3.19-1:** No Impact (less than the Project) because no water, wastewater treatment, stormwater drainage, electric power, or telecommunications utilities or services would be needed that could require construction that would cause significant environmental effects. • **Impact 3.19-2:** No Impact (less than the Project) because Alternative 2's rooftop development would not affect surface drainage. • **Impact 3.19-3:** No Impact (less than the Project) because no water demand would be generated on the site.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.19-3 LTS. The Heartland Solar Project would have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years. **Impact 3.19-4**: LTS. The Heartland Solar Project would not result in a determination by the wastewater treatment provider that serves the Project that it does not have adequate capacity to serve the Heartland Solar Project's projected demand in addition to the provider's existing commitments. **Impact 3.19-5**: LTS. The Heartland Solar Project 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. **Impact 3.19-6:** LTS. Construction, operation, and maintenance of the PG&E Components would not result in significant impacts to utilities and service systems. **Impact 3.19-1c**: LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to the construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, or telecommunications facilities. **Impact 3.19-2c**: LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to insufficient availability of water supplies to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. **Impact 3.19-3c**: LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative impact due to the generation of solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or due to other impairment of the attainment of solid waste reduction goals.	• **Impact 3.19-3:** No Impact (less than the Project) because no Project-related water supplies would be needed. • **Impact 3.19-4:** No Impact (less than the Project) because no Project-related wastewater treatment would be needed. • **Impact 3.19-5:** No Impact (less than the Project) because no Project-related solid waste would be generated. • **Impact 3.19-6:** No Impact (less than the Project) because no changes to the PG&E Components would occur that could affect utilities and service systems. • **Impact 3.19-1c-3c:** No Impact (less than the Project) because no Project-related utility or service system demand would be generated on-site that could cause or contribute to significant cumulative impacts. • **Impact 3.19-4c**: No Impact (less than the Project) because no PG&E Component-related utility or service system demand would be generated on-site that could cause or contribute to significant cumulative impacts.	• **Impact 3.19-3:** LTS (similar but less than the Project) because less water would be required to support Alternative 1 due to its reduced size as compared to the Project. • **Impact 3.19-4:** LTS (similar but less than the Project) because the reduction in wastewater generated by Project-related development under Alternative 1 would not result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project. • **Impact 3.19-5:** LTS (similar but less than the Project) because Alternative 1 would generate less solid waste than the Project and thus would not generate waste in an amount that would exceed state or local standards or the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. • **Impact 3.19-6:** LTS (same as the Project) because the same changes to the PG&E Components would be needed as for the Project as proposed. • **Impacts 3.19-1c—3c:** LTS (similar but less than the Project) because Alternative 1 would result in reduced incremental contributions to cumulative conditions compared to the Project, and thus also would not cause or contribute to any significant adverse cumulative impact on utilities and service systems. • **Impact 3.19-4c**: LTS (same as the Project) because the same PG&E Component-related utility or service system demand would be generated by Alternative 1 as the Project.	• **Impact 3.19-4:** No Impact (less than the Project) because wastewater would not be generated on-site that would require treatment. • **Impact 3.19-5:** No Impact (less than the Project) because Alternative 2 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. • **Impact 3.19-6:** No Impact (less than the Project) because no changes to the PG&E Components would occur that could affect utilities and service systems. • **Impacts 3.19-1c—3c:** No Impact (less than the Project) because Alternative 2 would not cause or contribute to significant cumulative impacts. • **Impact 3.19-4c**: No Impact (less than the Project) because no PG&E Component-related utility or service system demand would be generated by Alternative 2 that could cause or contribute to significant cumulative impacts.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.19-4c: LTS. Construction, operation, and maintenance of the PG&E Components would not cause a cumulatively considerable contribution to cumulative utilities-related impacts.			
Wildfire			
Impact 3.20-1: LTSM. The Heartland Solar Project would not substantially impair an adopted emergency response plan or emergency evacuation plan with implementation of Mitigation Measure 3.18-1 requiring implementation of a Construction and Decommissioning Traffic Management Plan. **Impact 3.20-2:** LTS. The Heartland Solar Project would not (due to slope, prevailing winds, and other factors) exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. **Impact 3.20-3:** LTS. The Heartland Solar Project would require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or result in temporary or ongoing impacts to the environment. **Impact 3.20-4:** LTS. Construction of the PG&E Components could affect wildfire considerations by impairing emergency evacuation, if needed, or by introducing additional potential ignition sources into the environment. **Impact 3.20-1c:** LTSM. The Heartland Solar Project would not cause or contribute to a significant cumulative effect due to substantial impairment of an adopted emergency response plan or emergency evacuation plan with implementation of Mitigation Measure 3.18-1 requiring implementation of a Construction and Decommissioning Traffic Management Plan.	**Overall: less than the Project** • **Impact 3.20-1:** No Impact (less than the Project) because no Project-related development would substantially impair an adopted emergency response plan or emergency evacuation plan. • **Impact 3.20-2:** No Impact (less than the Project) because no Project-related development would exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. • **Impact 3.20-3:** No Impact (less than the Project) because no Project-related installation and/or maintenance of fuel breaks, power lines, and other electrical utilities would occur on-site that could exacerbate fire risk or result in temporary or ongoing impacts to the environment. • **Impact 3.20-4:** No Impact (less than the Project) because no PG&E Component construction would occur that could affect wildfire considerations. • **Impact 3.20-1c:** No Impact (less than the Project) because no Project-related development would cause or contribute to a significant cumulative effect due to substantial impairment of an adopted emergency response plan or emergency evacuation plan. • **Impact 3.20-2c:** No Impact (less than the Project) because no Project-related development would cause or contribute to a significant cumulative effect by exacerbating wildfire risks due to slope, prevailing winds, or other factors.	**Overall: same as the Project** • **Impact 3.20-1:** LTSM (same as the Project) because the reduced Project size could impair an adopted emergency response plan or emergency evacuation plan, but would not substantially do so if Mitigation Measure 3.18-1 is implemented. • **Impact 3.20-2:** LTS (same as the Project) because the reduced Project size would be subject to the same prevailing winds, and other factors as the Project. This would result in a less-than-significant impact related to the exacerbation of wildfire risks and related exposure of Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of one. • **Impact 3.20-3**: LTS (same as Project) because Alternative 1 would also require the installation or maintenance of infrastructure such as roads, fuel breaks, emergency water sources, power lines, or other utilities that could exacerbate fire risk or result in temporary or ongoing impacts on the environment. • **Impact 3.20-4:** LTS (same as Project). Construction of the PG&E Components would affect wildfire considerations in the same way as the Project would. • **Impact 3.20-1c**: LTSM (same as Project) because the reduced Project size would be subject to the same site conditions that affect the risk of exposure of people or structures to significant site condition-related risks. Mitigation Measure 3.18-1 would apply.	**Overall: less than the Project** • **Impact 3.20-1:** No Impact (less than the Project) because Alternative 2 would not require development that could substantially impair an adopted emergency response plan or emergency evacuation plan. • **Impact 3.20-2:** No Impact (less than the Project) because rooftop development pursuant to Alternative 2 would not exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. • **Impact 3.20-3:** LTS (less than the Project) because installation and/or maintenance of electrical equipment on existing rooftops would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. • **Impact 3.20-1c:** No Impact (less than the Project) because Alternative 2 would not cause or contribute to a significant cumulative effect due to substantial impairment of an adopted emergency response plan or emergency evacuation plan. • **Impact 3.20-4:** No Impact (less than the Project) because no PG&E Component construction would occur under Alternative 2 that could affect wildfire considerations. • **Impact 3.20-2c:** No Impact (less than the Project) because Alternative 2 would not cause or contribute to a significant cumulative effect by exacerbating wildfire risks due to slope, prevailing winds, or other factors.

Impacts of the Heartland Solar Project*	Impacts of the No Project Alternative Compared to the Project	Impacts of Alternative 1 Compared to the Project*	Impacts of Alternative 2 Compared to the Project
Impact 3.20-2c: LTS. The Heartland Solar Project would not cause or contribute to a significant cumulative effect by exacerbating wildfire risks due to slope, prevailing winds, or other factors. **Impact 3.20-3c:** LTS. The Heartland Solar Project would not cause or contribute to a significant adverse cumulative effect due to roads, power lines, or other utilities the installation or maintenance of which could exacerbate fire risk or result in temporary or ongoing impacts to the environment. **Impact 3.20-4c:** LTS. Construction of the PG&E Components would not cause impacts that contribute to cumulative effects on wildfire considerations.	• **Impact 3.20-3c:** No Impact (less than the Project) because no Project-related development would cause or contribute to a significant adverse cumulative effect due to roads, power lines, or other utilities the installation or maintenance of which could exacerbate fire risk or result in temporary or ongoing impacts to the environment. • **Impact 3.20-4c:** No Impact (less than the Project) because no Project-related construction of the PG&E Component would occur, there would be no impacts that contribute to cumulative effects on wildfire considerations.	• **Impact 3.2-2c**: LTS (same as the Project) because, for the reasons discussed above and in the context of the Project, Alternative 1 would not make a cumulatively considerable contribution to any potentially significant cumulative wildfire impact. • **Impact 3.20-3c**: LTS (same as the Project) because, for the reasons summarized above and in the context of the Project, Alternative 1 would not contribute to a significant adverse cumulative effect due to roads, power lines, or other utilities which could exacerbate fire risk or result in temporary or ongoing impacts to the environment. • **Impact 3.20-4c:** LTS. (same as the Project) Construction of the PG&E Components would not cause impacts that contribute to cumulative effects on wildfire considerations.	• **Impact 3.20-3c:** No Impact (less than the Project) because development of Alternative 2 would not cause impacts that could combine with the impacts of other projects to cause or contribute to a significant adverse cumulative effect due to roads, power lines, or other utilities the installation or maintenance of which could exacerbate fire risk or result in temporary or ongoing impacts to the environment. • **Impact 3.20-4c:** No Impact (less than the Project) because no construction of the PG&E Component would occur, there would be no impacts that contribute to cumulative effects on wildfire considerations.

NOTES: CDFW = California Department of Fish and Wildlife; Project = Heartland Solar Project; USFWS = U.S. Fish and Wildlife Service

* *Significance conclusions:* LTS = Less than Significant; LTSM = Less than Significant with Mitigation Incorporated

SOURCE: Data compiled by Environmental Science Associates in 2025

4.6 References

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CHAPTER 5
Report Preparation

5.1 Lead Agency

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5.3 Entities Consulted and Recipients of the Draft EIR

A list of the entities consulted and recipients of the Draft EIR is included in **Appendix M**, *Recipients of the Draft EIR*. The list includes Project-specific entities and individuals; possible responsible agencies, trustee agencies, and potentially affected Federal agencies; other agencies; Native American tribes; other stakeholders; and owners of property within 1 mile of the Project site.